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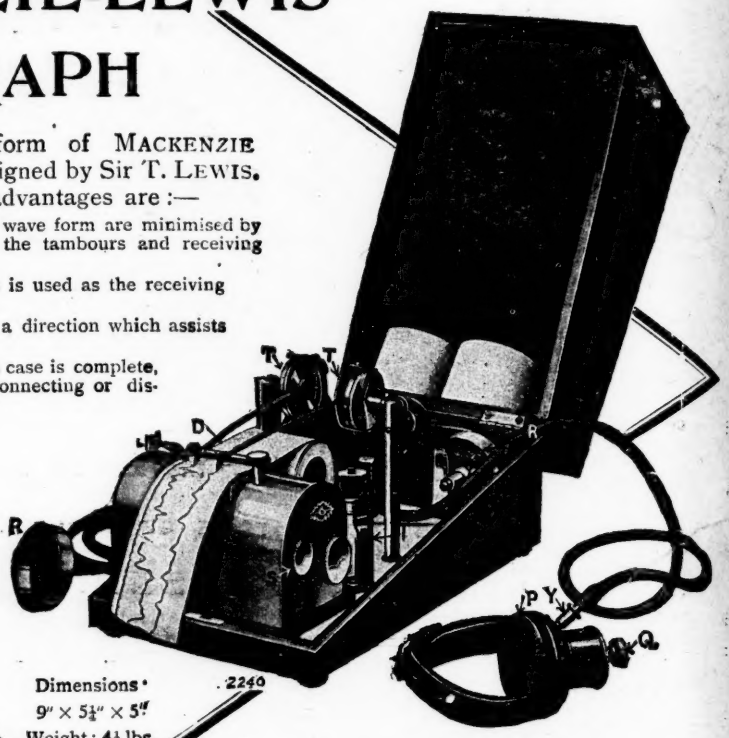

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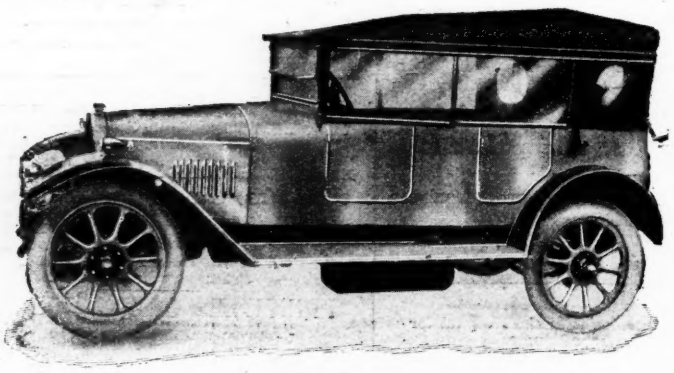

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THE NATURE AND SIGNIFICANCE OF HEART SYMPTOMS.

BY

SIR JAMES MACKENZIE, M.D., F.R.C.P., F.R.S.

(From the Institute for Clinical Research, St. Andrews.)

I. STIMULI CONCERNED IN THE HEART BEAT.

INTRODUCTION.

IN 1905 I published in this JOURNAL a series of articles on "New methods of studying affections of the heart."[1] The articles were the outcome of a research in which I had been engaged for nearly twenty years. A basis was laid for the differentiation of abnormal rhythms, and the practical importance of the research was illustrated by the action of digitalis. The varied and seemingly capricious effect of digitalis on the human heart was demonstrated to be due to the fact that digitalis may act in one way on a diseased heart and another on a normal heart, and that the drug may act differently in different diseases. Although the methods have been greatly improved, especially since the introduction of the ink polygraph and the electro-cardiograph, and a great deal of light has been thrown upon the mechanism of abnormal rhythms, little real advance has been made in the understanding of matters essential for the intelligent practice of medicine, such as the significance of symptoms and the effects of remedies. It has long been evident that a new concept was needed if these essentials were to be acquired. At the Institute for Clinical Research at St. Andrews we have given particular attention to this aspect of the subject, and we have been able to recognize some of the fundamental principles concerned in the production of the symptoms of disease. The application of these principles to the interpretation of cardiac phenomena has shed fresh light upon the subject which enables us to present the symptoms of cardiac affections in a way that brings out their peculiar significance and opens up new fields for exploration.

The Development of the Heart.

At an early stage of development the heart is represented by a tube, which is pulsatile, the contraction starting at a definite part which in later development becomes the sinus venosus. In the course of development pouches are formed on the side of the tube which ultimately become the auricle and ventricle. Sir Arthur Keith has drawn for me a diagram (Fig. 1) which represents a stage of development. Here the heart is represented by the primitive cardiac tube (P.C.T.), with the auricle (A) and ventricle (V) as pouches on its sides. In the further course of development the contractile function of the tube is lost and taken over entirely by the auricle and ventricle; but the tube remains as the conducting system, the sinus venosus being represented by the cells of the sino-auricular node.

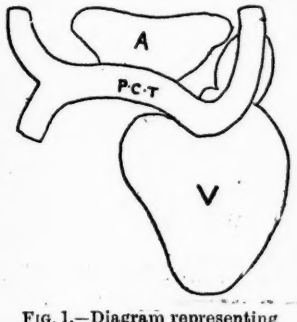

FIG. 1.—Diagram representing an early stage in the development of the heart. P.C.T. is the primitive cardiac tube, on the sides of which there develop pouches A and V, which become the auricles and ventricles. The primitive cardiac tube in the fully developed heart is probably represented by the conducting system, shown in Fig. 2.

Fig. 2 is a diagram of the fully developed heart; it shows that the primitive cardiac tube has been transformed into the conducting system (sino-auricular node, auriculo-ventricular node, and auriculo-ventricular bundle).

The cells from which the different parts of the heart have been evolved were originally identical, but as development proceeded the cells became modified to meet the functions imposed upon them. At first each cell could not only contract but could produce the stimulus which caused contraction. Thus it is that while originally the cells of the primitive cardiac tube were contractile as well as stimulus-producing, they gradually lost their power of contraction, but developed the function of stimulus production and conduction, to meet the requirements of the new arrangements for contraction.

The cells of the auricle and ventricle, on the other hand, did not in any special degree develop the stimulus-production or conductivity function, which remained primitive, but developed the contractile function. Though it is true that all cells of the heart have the power of stimulus production and of conductivity, they have them in a very unequal degree.

In the course of development some peculiar influence is acquired whereby the older tissues represented by the conducting system control the muscle cells of the auricle and ventricle, and it is the loss of this control that enables the muscle cells to show their peculiar nature, as in auricular fibrillation and the idio-ventricular rhythm.

The Constitution of the Heart.

From this way of looking at the matter we can recognize two main structures in the heart concerned in its action, differing widely in structure and in function:

(1) A conducting system, consisting of peculiar cells of two kinds:

- (*a*) The pale filiform cells constituting the sino-auricular and auriculo-ventricular nodes.
- (*b*) The large cells, known as the Purkinje cells, which constitute the auriculo-ventricular bundle, and are also found in the walls of the auricles and ventricles:

(2) A contracting system, consisting of the peculiar muscle cells of the auricular and ventricular walls.

There are also nerve cells and fibres, from the vagus and sympathetic nerves, which take part in regulating the sino-auricular node. The valve apparatus is, for the present, not considered.

The Manner of the Starting of the Heart's Contraction.

Before dealing with the features of the different rhythms of the heart it may be as well to indicate the view accepted as to the rôle each part plays in a cardiac revolution.

It is recognized that all the tissues of the conducting and contracting systems just mentioned have the power of starting a contraction. It is recognized that in the normally acting heart the contraction first starts in a collection of peculiar cells situated at the mouth of the superior vena cava—the sino-auricular node (S.A.N., Fig. 2). It is assumed that these cells have the power of obtaining material from the blood which, when a sufficient quantity has been stored, renders this node so susceptible to stimulation that it readily discharges a stimulus which causes the auricle to contract. The stimulus passes through the auricle to the auriculo-ventricular node (A.V.N., Fig. 2). Here the same process has been going on as that described in the sino-auricular node, and in response to the impulse from the sino-auricular node the auriculo-ventricular node discharges its stimulus. From the auriculo-ventricular node the impulse is conveyed by the auriculo-ventricular bundle (A.V.B., Fig. 2) to the ventricle, which responds by a contraction.

FIG. 2.—Diagram representing the two main systems concerned in the heart beat. (1) The conducting system, represented by the sino-auricular node (S.A.N.) and the auriculo-ventricular node (A.V.N) and bundle (A.V.B.). In both auricles and ventricles are also Purkinje fibres which belong to this system, represented by the scattered cells (P) in the auricle. The vagus (*vag.*) and sympathetic (*sy.*) also belong to this system. (2) The contracting system, represented by the muscle cells of the auricle (A) and ventricle (V).

Such in brief is the view which the present state of knowledge enables us to give of the normal rhythm of the heart. It will be seen that the functions of the conducting system are (1) to originate a stimulus which excites the auricle and ventricle to contract — hence we speak of this function as stimulus production; and (2) to convey the stimulus by a special path—hence we speak of the function of conduction.

There are many abnormal rhythms, due to the fact that the cells, both of the conducting system and the contracting system, possess under certain circumstances the power of starting a contraction. The reason that these cells do not start independently in the normal state is that the sino-auricular node reaches the susceptible stage and "goes off"

earlier than the other parts of the conducting system, so that before they are ready to start off by a local stimulus they receive the stimulus from the sino-auricular node. The starting places in the conducting system lower than the sino-auricular node become stimulable later than the sino-auricular node; the auriculo-ventricular bundle, for instance, if it does not receive the stimulus from above goes off about thirty times a minute.

Under abnormal circumstances the heart beat may start from a stimulus arising in any part of the conducting system and also in the muscle cells of the auricle and ventricle. There is a marked difference in the heart beat which arises in any part of the conducting system from that which arises in the muscle cells of the contracting system (auricle and ventricle).

The Character of the Heart Beat Originating in the Conducting System.

The normal heart beat, starting at the sino-auricular node, sends a stimulus which affects in orderly sequence the parts below. It is well regulated and proceeds at a pace which leaves time for the cells in all parts to perform their function in a manner likely to be efficient—that is, with sufficient time for them to rest, and to accumulate a sufficient store of nutritive material for the efficient performance of their functions.

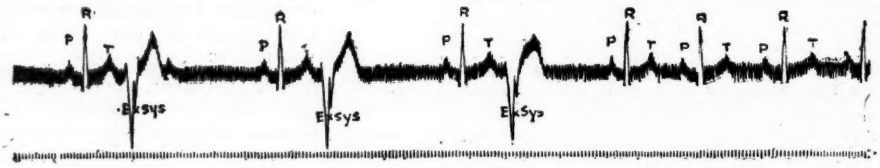

FIG. 3.—The electro-cardiogram of ventricular extra-systoles. In the first part of the record are three normal beats, P.R.T., followed each by an extra-systole (*ex.-sys.*). The beats (P.R.T.) at the end are normal. The type of radial pulse which the extra-systoles produced is seen in the latter part of Fig. 11, where the extra-systolic beats failed to reach the radial artery.

The normal beat takes place when all tissues have time to be completely restored. Moreover, the beats which originate lower down in the conducting system, in the auricle (in tissue which I hypothesize is present, as distinct from the ordinary auricular muscle fibres), in the auriculo-ventricular node and bundle, all result in a well-ordered, powerful contraction of the ventricle.

The Electro-cardiogram.

When a muscle contracts it generates a current which can be led from the body and made to activate a string galvanometer. The movements of the string or thread that result can be photographed. In such a photograph certain characteristic movements are recorded, due to the contraction of the auricles and ventricles, which permit some useful deductions to be made as to the place where the heart's contractions start.

The electro-cardiogram of the normal heart beat is distinctive. It is shown in the last part of Fig. 3, where each cardiac revolution is represented by the waves P.R.T.; P is due to the auricular systole, while R and T are due to the ventricular systole. In this record the beats marked P.R.T. are normal beats.

FIG. 4.—Electro-cardiogram of a rhythm starting in the conducting tissue of the auricle and passing to the sino-auricular node. This is shown by the inversion of the P wave at the beginning of the record, and the gradual change of the wave in the upright at the end of the tracing, where the record is normal. (Cohn.)

When the starting place of the heart's contraction is at some other place than the sino-auricular node the position and character of the P wave are altered. In the rhythm arising in the auricle the P wave is inverted. I suggest that in such an instance the contraction arises in some part of the conducting system in the auricles. Hitherto there has not been discovered a direct connexion between the sino-auricular node and the auriculo-ventricular node; but G. A. Gibson[2] pointed out thirteen years ago that Purkinje cells were to be found in the auricle, an observation confirmed lately by Holmes.[3]

Such cells must be there for a purpose, and that purpose is likely to be the same as in other parts of the heart. There is a great difference between heart beats which presumably start in these cells and the beats which start in the muscle cells (as in auricular flutter and fibrillation), as we shall see later. Moreover, such an electro-cardiogram as Fig. 4 shows an inverted P wave at the beginning, which gradually changes its character till it becomes upright and normal, suggesting that the stimulus arose at first outside the sino-auricular node, but gradually crept back along a path to the sino-auricular node.

Characteristic electro-cardiograms arise in the auriculo-ventricular node and bundle. All electro-cardiograph records of the ventricular contraction when the stimulus enters the ventricle by the bundle show the R.T. waves. When the stimulus for contraction arises in the ventricle the electro-cardiogram is different, representing usually the features shown by the extra-systole (*ex.-sys.*) in Fig. 3.

The Idio-ventricular Rhythm.

The term "idio-ventricular rhythm" is used here to describe the contractions that arise in the muscle cells of the ventricle. It has been used variously, as for the ventricular contraction in complete heart-block, but there the contraction does not arise in the cells of the ventricle but in the cells of the remains of the bundle, and the electro-cardiogram shows the usual ventricular R.T. waves, indicating that the stimulus entered the ventricle by way of the bundle. There are several kinds of ventricular rhythms, but one form only is dealt with here.

The occasional irregularity which goes under the term of ventricular extra-systole is due to a contraction which arises in the ventricle, and is quite independent of the stimulus coming down the bundle from the auricle, as shown in Fig. 3, where the large movement (*ex.-sys.*) is due to a ventricular extra-systole. In place of a solitary contraction, which is usual, a number of these ventricular systoles may occur and produce a persistent abnormal rhythm (the idio-ventricular rhythm). This rhythm, however, is rarely entirely composed of these beats, but is interrupted by a pause, followed by a beat arising in the normal way. The abnormal rhythm is therefore characterized by groups of small beats interrupted at varying intervals by one or two large normal beats, as shown in Fig. 5, where there are two groups of these idio-ventricular beats. The diagram (Fig. 6) explains the tracing, and shows that the auricle is pursuing one rhythm, and that for the most part the ventricle is pursuing another and more rapid rhythm, interrupted by a beat which comes down from the auricle in a normal manner, shown in the diagram by a line passing across the space of the A.C. interval. The electro-cardiogram of the idio-ventricular beat shows a series of large waves like those of the extra-systole in Fig. 3.

The Output of the Ventricles.

While the electro-cardiograms show characters distinctive of the places from which the heart's rhythm starts, there is other evidence which throws an unexpected light on the heart beat, the most important being the effect of the abnormal rhythm on the output of the ventricles. The consideration of this part of the subject gave rise to an inquiry into the cause of ineffective beats, which has led to a new field of investigation, and for this purpose we have to go back to the study of the sphygmogram of the radial pulse. We recognize that sphygmographic records give a somewhat imperfect conception of the output, but, imperfect as they are, they are the best we have and are of real value.

But these pulse records are of value also in that they throw light on processes going on within the heart whose recognition is essential to the understanding of the mechanism—such, for instance, as the part played by the conducting system and by the muscle cells of the left ventricle during abnormal rhythms. We will therefore consider the subject here from this point of view.

(a) The Output of the Ventricle in Beats arising in any Part of the Conducting System.

We expect that under normal circumstances the contraction of the muscle cells of the ventricle will be so organized that they will contract in such a manner as to facilitate the expulsion of the contents. This organized mechanism is dependent on the manner in which the stimulus enters the ventricle and on the nature of the stimulus. In the various electro-cardiograms the stimulus which arises above the ventricle, whether in the sino-auricular node, the auricle, the auriculo-ventricular node, or the auriculo-ventricular bundle, all produce the same type of ventricular electro-cardiogram. Moreover, in all the rhythms arising in the conducting system there is also an effective contraction of the ventricle. The size and force of the beat depend, within certain limits, on the rate, inasmuch as more blood will have accumulated in the ventricle, and consequently more will be expelled when the rate is infrequent than when it is frequent. The infrequent radial pulse in complete heart-block is strong and forcible.

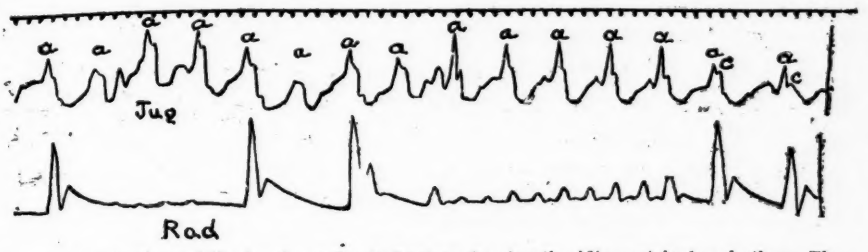

FIG. 5.—Tracings of the jugular and radial pulses showing the idio-ventricular rhythm. The jugular tracing shows the waves due to the auricle (*a*) occurring regularly unaffected by the rapid action of the ventricle—shown by the radial beats. There are two groups of these idio-ventricular beats separated by two normal beats of the heart. (See diagram, Fig. 6.)

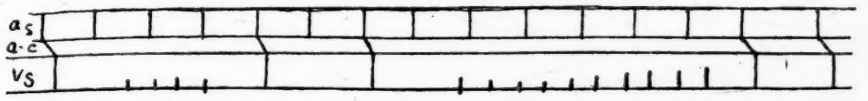

FIG. 6.—Diagram of Fig. 5 showing the relation of the auricle to the ventricle. The auricular and ventricular beats pursue independent rhythms except when the radial beats are large, and the diagram shows that the stimulus passes the *a-c* space and stimulates the ventricle.

(b) The Output of the Ventricle in Beats due to Extra-systole.

In extra-systoles of the auricle the impulse travels from the auricle by the bundle and enters the ventricle by the usual path, producing usually an effective output. Hence an extra-systole of the auricle may be of good size—smaller than the normal beat merely because it is premature, and in consequence the ventricle is not as full when it contracts in response to the premature auricular stimulus as it does to the normal.

Extra-systoles in the ventricle arise in some part of the muscle cells, and the wave of contraction therefore does not sweep through the walls of the chamber in the normal manner. This is seen in the character of the electro-cardiogram, as in Fig. 3. As the contraction spreads to the muscle cells in a way different from the normal the output is greatly diminished; this is well seen in the small beat which usually results from a ventricular extra-systole, or in the absence of a beat in the radial pulse, as in Fig. 11.

(c) The Output of the Ventricle with the Idio-ventricular Rhythm.

As the idio-ventricular beats are of the same nature as ventricular extra-systolic beats, the output of the ventricle is greatly lessened, and the radial beats are in consequence very small. This is brought out in Fig. 5, where there are a series of small beats, due to beats arising from a stimulus in the ventricle, interrupted by large beats arising in the normal way. In the tracing from the jugular pulse it will be seen that the beats of the auricle (*a*) are regular, and undisturbed by the numerous small ventricular beats. These latter occur in groups, and at the end of a group there is a pause followed by a large beat, which (as shown in the diagram, Fig. 6) is due to the stimulus entering the ventricle in the normal way.

(d) The Output of the Ventricle in Auricular Fibrillation.

The ventricular beat in auricular fibrillation is started by a stimulus entering by the auriculo-ventricular bundle, and so we would expect a normal and efficient beat. Apparently when the rate is infrequent the beat may be efficient, but when the rate is increased the beats tend to become less efficient in a curious manner. When the rate is moderate or slow the rhythm is irregular and there is often a distinct relation between the size of the beat and the preceding pause. But with increase of rate this relationship may be lost, and we have beats of various sizes without any relation to the duration of the preceding pause. This is brought out in Fig. 7, which shows the features characteristic of auricular fibrillation—irregularity in force and rhythm, with the typical ventricular form of jugular pulse. The tracings sometimes have a superficial resemblance to those of the idio-ventricular rhythm, but there is no pause before the big radial beat, and there is no evidence of an auricular contraction preceding it. Moreover, it must be borne in mind that the stimulus for contraction in the idio-ventricular rhythm arises in the ventricle, while in auricular fibrillation the stimulus enters by the auriculo-ventricular bundle.

The radial tracing (Fig. 7) shows the characters peculiar to auricular fibrillation in that there is often no relation between the size of the beat and the preceding pause, the pause before a small beat sometimes being longer than the pause preceding the larger beats. The jugular tracing shows that the radial beats corresponded with the ventricular contraction, for each radial beat has a corresponding *v* wave.

The Interpretation of the Radial Tracing in Auricular Fibrillation.

This lack of correspondence between the size of beat and preceding pause seems to be peculiar to this abnormal rhythm. It is possible that the same influence is present in auricular flutter, but that awaits further investigation. At one time I suspected that the small beats might be due to ventricular extra-systoles, but the electro-cardiograph has shown that this is not the case. The only explanation seems to be that the variation in the size of the radial beats is due to differences in the contraction of the muscle cells of the ventricle. Probably they do not all contract at the same time—the varying size of the beat being due to the variation in the number of cells stimulated to contract.

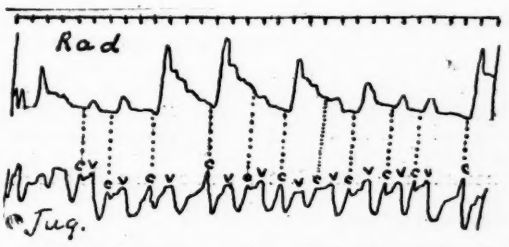

FIG. 7.—Simultaneous tracings of the radial and jugular pulses. The jugular pulse (*c.v.*) is of the ventricular type. The beats in the radial are very unequal, and there is no constant relation between the size of the beat and the preceding pause—a large beat sometimes following a short pause and vice versa. This kind of irregularity with a want of relation between the size of beat and the length of the preceding pause occurs only in auricular fibrillation.

In the patient from whom Fig. 7 was obtained the rhythm of the ventricle would suddenly pass from fibrillation to the normal, and the radial pulse would show the character of a good-sized regular pulse indicative of a good acting ventricle. In considering the reason for the peculiar effect one can only infer that there was some difference in the nature of the stimulus which entered the ventricle, and it is therefore necessary to inquire into the nature of the stimulus to see if it be the same in auricular fibrillation as in the normal rhythm.

The Effect of Auricular Fibrillation and Flutter on the Auriculo-ventricular Node and Bundle.

When the auricle is fibrillating it has been reasoned that each muscle cell throws out a stimulus in its contraction, so that there is an incessant shower thrown upon the auriculo-ventricular node. How many of these pass depends on the susceptibility of the node, and this is estimated by the number of ventricular responses. When the ventricular rate

is slow it is inferred that the auriculo-ventricular node is less susceptible to stimulation. When the rate is increased in frequency it is assumed that the auriculo-ventricular node is more susceptible. But there is more in the matter than that.

We note such facts as these. When bodily effort is made the ventricular contractions are more numerous than when the rhythm is normal. Thus a patient at rest with auricular fibrillation may have a ventricular rate of 70. On moderate effort it may readily rise to 130 to 150 beats per minute—the same effort raising a normal heart only 10 to 15 beats.

While there is this suggestion of undue susceptibility in a positive sense, we have more convincing evidence of an undue susceptibility in the contrary sense. A patient with a normal rhythm but with a slight delay in the passage of the stimulus from auricle to ventricle, as shown by an abnormally wide *a–c* interval, developed auricular fibrillation. His ventricular rate with the normal rhythm was wonderfully uniform, about 60 beats per minute. With the onset of auricular fibrillation it fell to 40 beats per minute.

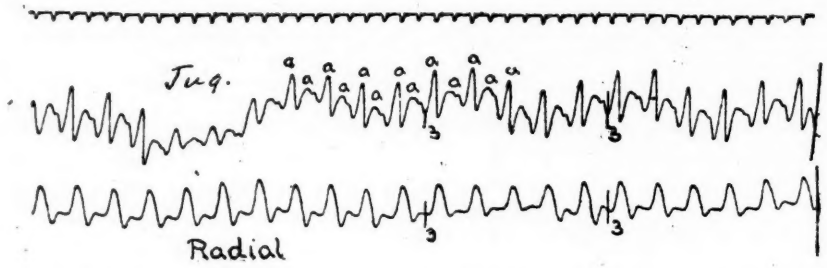

FIG. 8.—Tracing of the jugular and radial pulses during auricular flutter. (Auricular rate, 280; ventricular, 140.) The reason for the varying height of the *a* wave is that every second auricular contraction falls during ventricular systole, so that more blood is thrown back into the veins, and the *a* waves are therefore larger.

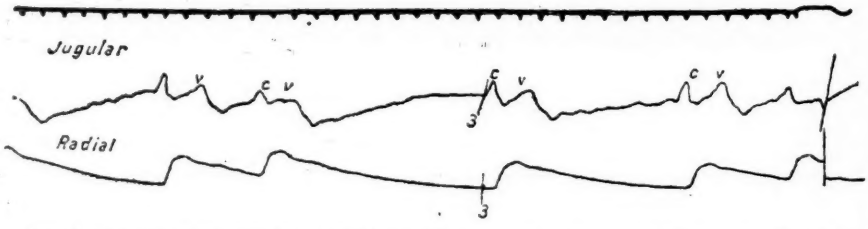

FIG. 9.—Tracing of the jugular and radial pulses from the same patient as Fig. 8 after digitalis Auricular fibrillation is present, and the ventricular rate is 40 per minute.

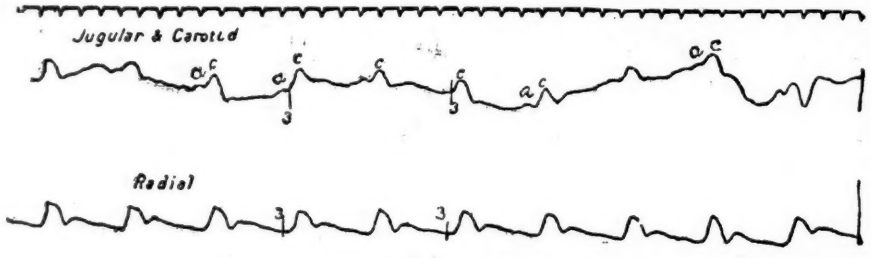

FIG. 10.—Tracings showing the normal rhythm, which varied with auricular fibrillation, as shown in Fig. 9. The heart rate is 70 per minute, and the *a–c* interval normal.

The Effect of Digitalis.

The most striking evidence of a difference in the nature of the stimulus is seen in the action of digitalis. The slowing that takes place in auricular fibrillation is much greater than can be produced in patients with a normal rhythm. Not infrequently, after a few doses, the rate would fall from 130 to 50 or 40 beats per minute. When the drug was stopped, in a few days the rate would rise again to 130.

The most dramatic evidence of the effect of digitalis is seen in certain cases of auricular flutter. In some patients with this condition digitalis speedily causes a great fall in the ventricular rate, accompanied evidently with the passage of the auricular flutter into auricular fibrillation. The record in Fig. 8 shows a pulse or ventricular rate of 140 and an auricular rate of 280. After 1 drachm of tincture of digitalis taken for five days the pulse rate fell to 40 beats per minute, as in Fig. 9, and the rhythm had altered to auricular fibrillation, as shown by the jugular pulse. On the sixth day, periods of the normal rhythm with a rate of 70 per minute (Fig. 10) varied with periods of auricular fibrillation with a ventricular rate of 40 (Fig. 9). It is manifest that the slow ventricular rate is not due to heart-block, for in the periods of the normal rhythm the stimulus was conducted at the rate of 70 per minute, while during the auricular fibrillation it was conducted at the rate of 40 per minute. Moreover, the *a–c* interval in Fig. 10 indicates a normal state of the conducting system (auriculo-ventricular node and bundle).

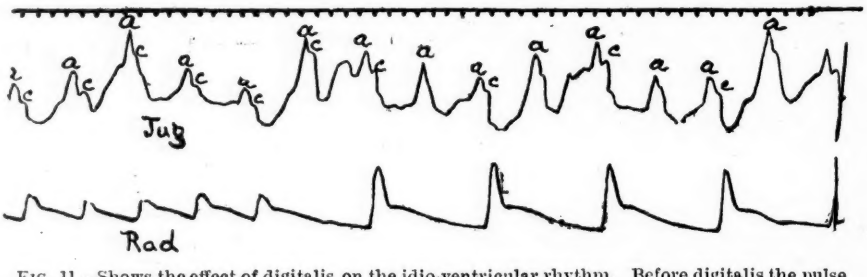

FIG. 11.—Shows the effect of digitalis on the idio-ventricular rhythm. Before digitalis the pulse was very irregular, as in Fig. 5. Digitalis caused the resumption of the normal rhythm, as in the first five beats of this tracing; the rate is halved in the latter part of the tracing, due to the occurrence of extra-systoles, which fail to affect the radial pulse. The auricular rate (waves *a*) is constant throughout. The character of the electro-cardiogram of these extra-systoles is seen in Fig. 3.

The Effect of Digitalis on the Idio-ventricular Rhythm.

The effect that digitalis has upon the idio-ventricular rhythm throws a little more light, and gives further evidence that it is probably not on the conducting system that the digitalis acts. This rhythm may be extremely sensitive to the action of digitalis, and as here the question of conduction by the auriculo-ventricular node and bundle does not arise we probably get nearer to the action of digitalis.

In a patient in whom this rhythm had been persistent for over a year digitalis had a very striking effect. He was very ill, with breathlessness and pain on exertion. Fig. 5 is a tracing typical of the radial pulse before the administration of digitalis. The response to the drug was very speedy, as after 3 drachms of the tincture the pulse became much slower and at times regular. This effect is seen in Fig. 11. At times the ventricle responds to each auricular beat, as in the first part of this tracing, while in the latter part of the tracing there is one radial beat to two auricular beats. This is due to the occurrence of ventricular extra-systoles so weak that they failed to produce a radial beat.

The digitalis was stopped, and in a few days the heart had increased in rate and resumed all the characters shown in Fig. 5, and the patient felt very poorly. The resumption of the digitalis had again the effect described, and he was told to continue the drug. Seen a year later, he was wonderfully well and had got so used to the digitalis that he could regulate the dose according to his necessity.

It is very likely that the effect of digitalis is the same in the fibrillating auricle as it is in the idio-ventricular rhythm. In both instances the auricle and ventricle have escaped from control of the conducting system, and a condition which is

susceptible to the influence of digitalis has been produced. Whether that is brought about by the direct influence of the drug modifying the stimulus or acting upon the muscle cells, or indirectly through the vagus, is not clear, but is a subject which awaits further investigation.

It is rare to get this form of idio-ventricular rhythm so persistent. In most of my cases it was transitory. In one other case I got a similar effect, but my opportunities were not sufficient for full observation. Dr. John Parkinson tells me that in one of his cases where this rhythm was persistent digitalis, though given in full doses, was without effect.

The Output of the Ventricle in Partial Heart-Block.

Further evidence of the difference between the two kinds of stimuli is found in what happens in partial heart-block. Here the bundle is damaged, so that the fibres are reduced in number, and the stimulus has a difficulty in passing from auricle to ventricle. However extreme the damage may be, and however weak the stimulus which manages to get through, the resultant contraction of the ventricle is always full and complete. In Fig. 12, where there is, as a rule, but one contraction of the ventricle to two contractions of the auricle, the radial beat is large and effective. In one instance the stimulus of the second auricular beat after some difficulty (as shown by the wide *a–c* interval) did get through to the ventricle, and here an efficient beat follows.

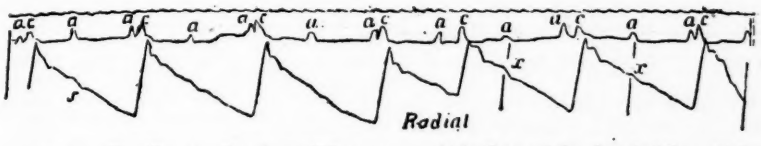

FIG. 12.—Simultaneous tracings of the movements in the neck (*a*, *c*) and of the radial pulse. There are two auricular waves (*a*) to one carotid (*c*) and radial beat, except in one instance where two successive *a* waves are followed by two *c* waves, and the distance between *a* and *c* is much increased in the last of these two beats. In this case the impulse from the auricle is hindered in passing to the ventricle, so that only the impulse from every second beat of the auricle reaches the ventricle except in one instance when the passage of the stimulus is delayed, as shown by the wide *a–c* interval. It is to be noted that the resulting radial beat is large and full, as compared with the radial beats in auricular fibrillation in Fig. 7.

The inference from these facts is that a stimulus weakened in passing through the conducting system, on reaching the ventricle, gives rise to an effective ventricular systole, in contrast to the stimulus arising in the contracting system, as in auricular fibrillation, where the stimulus may not provoke a full systole.

The Different Origins of the Stimuli.

The normal stimulus which arises in the sino-auricular node and passes by the auriculo-ventricular node and bundle to the ventricle is a stimulus of a peculiar kind which arises in cells evolved for this particular purpose. The stimulus which arises in auricular fibrillation is produced by cells which were not evolved for this purpose, the stimulus being merely incidental to the contraction of the muscle cells. It is not likely that the same character of stimulus would be produced by cells evolved for the special purpose and by cells evolved for a totally different purpose.

The stimulus which arises in the conducting system apart from the sino-auricular node—that is, in the auricle and auriculo-ventricular node and bundle—is of the same quality as that which arises in the sino-auricular node. We can therefore recognize two kinds of stimuli: (1) a stimulus A, which arises in the conducting system, and (2) a stimulus B, which arises in the contracting system.

Is the Difference in the Stimuli one of Quality or one of Strength?

Although it may seem that the difference between the two kinds of stimuli is one of strength, yet there are certain reasons which suggest that the difference is one of quality. We have seen, for instance, the peculiar effect of the stimulus on the contraction of the ventricle in auricular fibrillation. This peculiarity is more likely to be due to the quality of the stimulus than to its strength, for the presumably weak stimulus which reaches the ventricle in partial heart-block gives rise to an effective ventricular systole.

The suggestion that the quality of the stimulus is different when it arises in the Purkinje fibres in the ventricle from that when it arises in the muscle cells of the ventricle may account for some curious differences in other abnormal rhythms, as in auricular flutter, extra-systoles, and the idio-ventricular rhythm.

This presentation of the subject is of very real importance for the practice of medicine. The pulse rate and the character of the pulse are among the most instructive signs the doctor uses in estimating a patient's condition. The nature of pulse variations, even with the normal rhythm, is still imperfectly understood, and, as a consequence, only a small part of the information which they are capable of yielding is available. In the foregoing description some light is thrown upon the variations in rate and character which are due to abnormal rhythms, and we get a little nearer to understanding the action of digitalis, in that a factor hitherto unsuspected has been revealed. This aspect of the subject raises other questions, such as the nature of the stimulus in other abnormal rhythms—auricular flutter, the extra-systole, the idio-ventricular rhythm, etc. It also involves the question of stimulus conduction by nerves and the Purkinje cells. Can they convey and propagate from cell to cell stimuli of different qualities? The muscle cell to muscle cell stimulation in auricular fibrillation raises the question whether such intercellular stimulation occurs in other organs.

Summary of the Difference in the Heart's Contraction arising in the Conducting and Contracting Systems.

1. The stimulus for the normal rhythm of the heart arises in tissues specially evolved for the purpose. The stimulus in auricular fibrillation arises in tissue specially evolved for contraction, the stimulus production being merely an incident in the contraction.

2. There is a remarkable difference between the rhythms which arise in the conducting and contracting systems of the heart, due to the difference in the stimuli. These differences are shown especially in the response of the ventricle. The ventricular systole in the normal rhythm, as well as in those rhythms arising in any part of the conducting system, is complete and effective.

3. The ventricular systole, when the stimulus arises in the muscle cells of the auricle, is often partial and ineffective, and when it arises in the muscle cells of the ventricle it is always ineffective.

4. When the contraction starts in the muscle cells of the auricle, as in auricular fibrillation, the stimulus which arises is much more sensitive to agents which favour or retard its passage to the ventricle.

5. The effect of digitalis is strikingly different, it having a far greater effect on auricular fibrillation and flutter and on the idio-ventricular rhythm than on any rhythm arising in the conducting system.

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[1] BRITISH MEDICAL JOURNAL, March and April, 1905. [2] Gibson, A. G.: On the Primitive Muscle Tissue of the Human Heart, BRITISH MEDICAL JOURNAL, 1909, Vol. i, p. 149. [3] Holmes, A. Hillyard: The Auriculo-Ventricular Bundle in Mammals, *Journal of Anatomy*, Vol. 55, pt. 4, p. 269.

THE VALUE OF THE COMPLEMENT FIXATION TEST IN THE EXCLUSION OF ACTIVE PULMONARY TUBERCULOSIS.

BY

A. LISLE PUNCH, M.B.LOND., M.R.C.P.LOND.,

ASSISTANT PHYSICIAN, BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST; PHYSICIAN TO OUT-PATIENTS, ROYAL NORTHERN HOSPITAL;

AND

A. HOPE GOSSE, M.D.CANTAB., M.R.C.P.LOND.,

PHYSICIAN, BROMPTON HOSPITAL; PHYSICIAN TO OUT-PATIENTS, ST. MARY'S HOSPITAL.

A METHOD of performing the complement fixation test as a means of diagnosis in pulmonary tuberculosis has been published[1] by one of us (A. L. P.). By this method a positive result has been obtained in at least 98 per cent. of cases of definite pulmonary tuberculosis, while 140 cases selected as non-tuberculous controls gave a negative result in 137.

In all, the test has been performed in approximately 1,100 pulmonary cases or controls. Of these some 260 were definite cases of pulmonary tuberculosis, the criterion of a definite case being the undoubted presence of tubercle bacilli in the sputum. All save five of these gave a positive result. Of the five which gave a negative result three subsequently gave a positive. We do not propose here to enter into a discussion

of the possible explanation of these negative results, but we may mention in passing that we have formed the opinion that a negative result may occasionally be obtained in very acute cases of pulmonary tuberculosis due to the shortness of the interval between the invasion of the body by the tubercle bacillus and the onset of symptoms. Except in these rare cases the results of the test would suggest that a positive reaction is obtained by the time the infection gives rise to symptoms.

Some 140 presumably healthy people or patients suffering from non-tuberculous diseases were taken as negative controls. Three gave a positive result. These three cases have been considered in a previous publication. It is sufficient to mention here that in one definite evidence of enlarged, presumably tuberculous, glands in the neck was subsequently discovered; in another, on more careful examination, it was impossible definitely to exclude a tuberculous lesion in the lungs; while in the third no evidence of tuberculosis could be discovered. Of the remaining 700 cases some 220 gave a positive result and some 480 gave a negative. These were doubtful cases clinically, so that no definite conclusion could be drawn from them. All that could be said at the time without later investigation was that there seemed to be a reasonable correspondence between the clinical condition on the one hand and the negative or positive result on the other.

In many of the cases which gave a positive result the accuracy of the test has been proved by the finding at a later date of tubercle bacilli for the first time in the sputum, but it is not our intention to deal in this paper with the complement fixation positive cases.

The proof that cases giving a negative result are free from active pulmonary tuberculosis is a more difficult matter. It is only by the lapse of time that the practical proof of this contention can be firmly established.

It would be a very difficult matter to follow up all 480 of these cases, nor is it necessary in order to estimate the value of the test to attempt it. What is true of 50 unselected cases can be taken as approximately true of 500. Some 250 of these negative cases were at the time examined clinically by one or the other of us. Many of them have been examined by us at a later date. We only know of two cases of our own in which the test proved to be unreliable by the finding at a later date of tubercle bacilli in the sputum. Of the remaining 220 cases under our colleagues or other medical men, we know of three in which the test proved to be wrong by the finding of tubercle bacilli in the sputum. These three cases, with the two just mentioned, are the five cases referred to above. One was Sir John Broadbent's case and two were Professor Langmead's cases. If there are any other cases amongst these 480 in which the test has been proved to be unreliable by the finding of tubercle bacilli in the sputum we are unaware of them; and we may mention that we have been able to follow their course in a large number. We exclude a series of 50 cases which have been dealt with fully in a previous publication.[2]

The ultimate practical proof of the entire freedom from active pulmonary tuberculosis is the lapse of time, and we have taken an unselected series of fifty of our own cases in which the test was performed in 1920 with a negative result, and where possible repeated it from ten to twenty months later. A similar result was obtained in all except one. These cases were all patients at the Brompton Hospital in whom for various reasons pulmonary tuberculosis had been suspected. As the result of the first test we formed the opinion, and acted on it, that there was no active pulmonary tuberculosis. When the test was repeated from ten to twenty months later the greatest care was taken to have all bloods numbered by a third person, and included in series with known tuberculous bloods and unknown bloods, and the clinical condition handed to him. Thus if there should have been any doubt as to unconscious bias in the reading at the first test the numbering of the bloods at the second and the similar results amply prove the absence of bias at either.

Notes of Cases.

The clinical notes, taken before the tests were done, have been extracted, and as given below must serve as the evidence that we were dealing, in all the twenty cases,* with suspicious cases of pulmonary tuberculosis.

No. 1.—E. D. Haemoptysis, a teaspoonful on several occasions in previous three months. Loss of weight; weight 6 st. 2 lb. Sputum negative. Complement fixation test negative on May 31st, 1920. *Re-examination:* Feels better; slight cough and sputum; no crepitations; weight 7 st. No haemoptysis lately. Complement fixation test negative on April 22nd, 1921.

No. 2.—J. F. Complains of cough, sputum, night sweats; no crepitations; weight 9 st. 10 lb. Sputum said to have been positive once in 1919; negative since. Complement fixation test negative on June 4th, 1920. *Re-examination:* "Feeling fine." No cough, no sputum, no night sweats, no haemoptysis; no crepitations; weight 9 st. 10 lb. Complement fixation test negative on April 30th, 1921.

No. 3.—T. Haemoptysis streaks three weeks before; cough, sputum, and slight night sweats. Sputum three times negative. Dullness and crepitations at right base. Complement fixation test negative on June 16th, 1920. *Re-examination:* Cough, sputum, and dyspnoea, especially on exertion. Signs as before. Sputum negative. Diagnosis, fibrosis of right lung. Complement fixation test negative on May 6th, 1921.

No. 4.—I. B. Sent up for diagnosis. Pulmonary tuberculosis suspected. Pain in right chest; wasting. Pleurisy in February, 1920. No crepitations. Complement fixation test negative on June 18th, 1920. *Re-examination:* Feels quite fit; no symptoms. Complement fixation test negative on May 26th, 1921.

No. 5.—R. G. Cough; sputum copious; dyspnoea. Temperature 100.4°. Weight 9 st. 8 lb. Physical signs of cavity at right apex. Sputum repeatedly negative. Complement fixation test negative on June 18th, 1920. *Re-examination:* Symptoms and signs as before; weight 10 st. 2 lb. Sputum still negative. Diagnosis, apical bronchiectasis. Complement fixation test negative on May 20th, 1921.

No. 6.—R. Cough; pain in right chest; pleurisy right base. Father, sister, and brother all stated to have died of pulmonary tuberculosis in previous three years. No sputum available. Complement fixation test negative on June 2nd, 1920. *Re-examination:* No symptoms now; no crepitations. Complement fixation test negative on April 30th, 1921.

No. 7.—W. O. E. Haemoptysis half a pint in November, 1919. Cough; loss of weight. Been to a sanatorium. Colour in sputum fortnight before. No crepitations. Sputum negative. Weight 8 st. 8 lb. Complement fixation test negative on June 14th, 1920. *Re-examination:* Some cough and sputum; negative for tubercle bacilli. No further haemoptysis; no crepitations. Weight 8 st. 5 lb. Complement fixation test negative on May 1st, 1921.

No. 8.—J. J. T. Cough; pain in left chest. In military hospital 1916. "T.B. lung." Weight 9 st. 1 lb. Clubbing of fingers. Physical signs of unilateral fibrosis of left lung. Complement fixation test negative on October 30th, 1920. *Re-examination:* Physical signs as before. No tubercle bacilli in sputum. Weight 9 st. Complement fixation test negative on May 4th, 1921.

No. 9.—F. F. Cough; sputum. Temperature 99.6°; night sweats. Sputum negative. No crepitations. Complement fixation test negative on June 24th, 1920. *Re-examination:* Cough and morning sputum; no crepitations. No sputum sent for examination. Diagnosis, chronic bronchitis. Complement fixation test negative on May 16th, 1921.

No. 10.—H. V. Cough; sputum; coarse râles over lungs. Weight 9 st. 1 lb. Sputum stated to have been positive once—in July, 1919. Frequent attacks of asthma. Complement fixation test negative on May 26th, 1920. *Re-examination:* Has been under treatment since for asthma only. Chest dry on examination. Weight 9 st. 6½ lb. Sputum negative. Complement fixation test negative on May 26th, 1921.

No. 11.—A. K. No cough. Patient stated she had coughed up one pint of blood a month before. Complement fixation test negative on June 29th, 1920. *Re-examination:* While an in-patient was diagnosed as gastric ulcer. No chest symptoms. Complement fixation test negative on May 28th, 1921.

No. 12.—J. H. War pensioner. Cough; slight sputum. Tubercle bacilli reported once only in sputum, December, 1919. Sputum negative since. No crepitations; weight 8 st. 7 lb. Complement fixation test negative on August 5th, 1920. *Re-examination:* Feels well; no cough; no sputum. Weight 8 st. 7 lb. Complement fixation test negative on June 1st, 1921.

No. 13.—W. E. W. Weakness; cough. Streaks of haemoptysis two years before. Coarse râles in both lungs. Weight 8 st. 13 lb. Sputum negative. Complement fixation test negative on December 1st, 1920. *Re-examination:* Cough and sputum present; no tubercle bacilli in sputum. Coarse râles in chest. Weight 9 st. 7 lb. Complement fixation test negative on June 1st, 1921, and again on November 15th, 1921.

No. 14.—E. S. Cough; sputum. Haemoptysis in streaks in past three weeks. Temperature 99.4°. No crepitations. Complement fixation test negative on July 8th, 1920. *Re-examination:* No more haemoptysis; no crepitations. Complement fixation test negative on June 2nd, 1921.

No. 15.—E. B. Cough; sputum. Haemoptysis (slight) three weeks before. Temperature 99°; pulse 104. No crepitations. The complement fixation test was negative on August 19th, 1920. *Re-examination:* Patient replied fourteen months later: "I am glad to say I am keeping in the best of health, and have done so for a long time past now; had I felt in any way bad I should have come up before."

* The authors originally forwarded fifty cases, reported as those here printed. At our request they have consented, in order to save space, to the reproduction of the first twenty only. The reports of all the fifty cases presented a great similarity, and the twenty here given are a fair sample.

No. 16.—L., aged 20. Pain in chest; cough. Temperature 101° each night for three weeks. Signs of pleural effusion; confirmed by exploratory needle. Complement fixation test negative on November 2nd, 1920. *Post-mortem* examination six weeks after above test showed malignant growth in left lung and effusion into pleural cavity. Primary growth in ovary.

No. 17.—G. H., war pensioner. Cough; sputum; pain in chest. Stated he coughed up four pints of blood in April, 1920. Weight 8 st. 3 lb. Sputum negative. No crepitations. Complement fixation test negative on December 1st, 1920. *Re-examination:* Pain in abdomen after food. No crepitations. Weight 8 st. 4 lb. Sputum negative. Complement fixation test negative on October 5th, 1921.

No. 18.—S. Cough; sputum; pain in back. Debility six months. Sputum negative four times. No crepitations. Complement fixation test negative on July 14th, 1920. *Re-examination:* No fresh symptoms. Has been at work since last seen. Complement fixation test weakly positive on June 4th, 1921. Examination of sputum seven months later positive. Brother died of pulmonary tuberculosis in October, 1921. Contact. Complement fixation test strongly positive on February 11th, 1922.

No. 19.—E. W. Cough; sputum. Haemoptysis (streaks) in May, 1920. Loss of weight; feels ill. Temperature 99.6°. Weight 8 st. 5 lb. Sputum negative. Complement fixation test negative on September 27th, 1920. *Re-examination:* Feels well; no cough. Weight 8 st. 5 lb. Temperature 98°. No crepitations. Complement fixation test negative on November 8th, 1921.

No. 20.—T. P. Cough; sputum; dyspnoea. Weight 8 st. 4 lb. No crepitations. Sputum negative. Complement fixation test negative on September 24th, 1920. *Re-examination:* Feels better; still has dyspnoea. Weight 9 st. 3 lb. No crepitations. Complement fixation test negative on April 22nd, 1921.

Comments.

A study of the above cases will show that the clinical condition at the time of the first test justified a strong suspicion of pulmonary tuberculosis. In all of them some combination of cough, sputum, fatigue, loss of weight, pyrexia, haemoptysis, and pain in the chest was present—in fact all the common symptoms of pulmonary tuberculosis. The frequency of haemoptysis is a striking feature.

A study of the re-examination notes will show an absence of any further evidence of the disease some ten to twenty months later. The too frequent absence of sputum reports when the patients were re-examined is due to the absence of any sputum. In no case did apical crepitations appear at the later examination, and almost all cases were examined by post-graduates as well as the writers. No. 18 had a weak positive complement fixation test at the re-examination, and the sputum was found positive seven months after the positive complement fixation test; but he had been a "contact" till four months after the second test was taken when his brother died, so the infection may have occurred between the first and second tests. Many patients had regained their normal health, some had improved, and others were unchanged. Two of the fifty cases died, and *post-mortem* examinations showed malignant growths of the lung or pleura as the cause of death. After the lapse of ten to twenty months or even longer forty-nine had not developed any definite evidence of pulmonary tuberculosis, nor, with a few exceptions, were they even under treatment.

It is the absence of the development of any more definite evidence of tuberculous infection in all but one of these suspicious cases in the course of ten to twenty months afterwards that would appear to us to offer striking evidence in favour of the accuracy of the test and to demonstrate its value in the exclusion of active pulmonary tuberculosis.

We wish to thank the Lady Almoner of the Brompton Hospital for her valuable help in tracing the patients.

The laboratory work has been done in the Institute of Pathology and Research, St. Mary's Hospital, under a grant from the Medical Research Council.

REFERENCES.

[1] Punch, A. Lisle, *Lancet*, vol. ii, 1920, p 647. [2] Ibid., vol. ii, 1921, p. 497.

AT a meeting of the Manchester Pathological Society on February 8th, with Mr. Howson Ray in the chair, Dr. J. A. Murray, Director of the Cancer Research Fund, demonstrated the pathological anatomy of experimentally induced squamous carcinomata of the skin of the mouse following repeated and long-continued application of coal tar. Lantern slides were shown illustrating the growth of the tumours, their metastases and dissemination, and the invasion of the subjacent tissues. Reference was made to the application of autoplastic implantation of tumour fragments to bring out the powers of growth of the altered epithelium when removed from the direct irritating influence of the tar and of bacterial infection. By this method of artificial metastasis it was possible to demonstrate the malignancy of growths at a very early period. The relative advantages were discussed of other successful methods of inducing cancerous changes.

EVIDENCE OF PANCREATIC DISORDER IN RICKETS.*

BY

E. C. DODDS, M.R.C.S., L.R.C.P.,

CHEMICAL PATHOLOGIST AND LECTURER IN BIOCHEMISTRY, MIDDLESEX HOSPITAL; PATHOLOGIST TO THE ROYAL NATIONAL ORTHOPAEDIC HOSPITAL.

(From the Bland-Sutton Institute of Pathology.)

MANY observers have been working on the factors concerned in the production of rickets, and recently special prominence has been given to the view that the problem is intimately bound up with the question of diet, more especially with the amount and quality of the fats. It is urged also that carbohydrates play an important part, but as to the explanation of these two facts there is still considerable difference of opinion.

The well-known vitamin deficiency theory ascribes the production of rickets to a lack of the vitamin A, which is fat-soluble; but with regard to the carbohydrate part of the problem, no observer seems to have given a satisfactory explanation. In this communication the importance of both fats and carbohydrates is taken into account, but the conclusions to be drawn from the investigations made point in a different direction. As a result of the examination of cases of acute rickets in children, distinct evidence was found of pancreatic disorder, as determined by an increase (1) in urinary diastase, and (2) in faecal fat content.

1. *The Diastatic Power of the Urine.*

By means of its diastatic enzyme normal urine is able to hydrolyse starch solution to a mixture of products which give no colour with iodine solution. Wohlgemuth expressed this property of urine quantitatively by means of "units," the number of units of diastase being given by the number of cubic centimetres of 0.1 per cent. starch solution digested by 1 c.cm. of urine.

Method.

The usual method is to put up a series of test tubes, each being filled as follows:

Test tubes:	1.	2.	3.	4. - - - - - 12.
Starch 0.1%	2 c.cm.	2 c.cm.	2 c.cm.	2 c.cm. - - - 2 c.cm.
Urine ...	... 0.3 c.cm.	0.2 c.cm.	0.1 c.cm.	0.09 c.cm. - - 0.01 c.cm.
Saline...	... 0.7 c.cm.	0.8 c.cm.	0.9 c.cm.	1 c.cm. - - - 1 c.cm.

The starch solution is put in first, then the urine, and the saline is run in last, in order to wash the first two down to the bottom of the tube.

The tubes are incubated in a water bath at 37° C. for half an hour, are then cooled under tap water, and enough N/50 iodine solution to produce a permanent colour is added to each tube. The tube immediately preceding one with a mauve tint is taken as that in which the 2 c.cm. of starch solution is just digested by the urine. Suppose 0.1 c.cm. of urine digests 2 c.cm. of starch solution, then 1 c.cm. of urine would digest 20 c.cm. of starch solution—that is, there would be 20 units of diastase present.

Towards the end of this series of diastase reactions, I modified the original method so as to take into account the hydrogen-ion concentration of the urine. The diastatic enzyme works best at a hydrogen-ion concentration of P_H 6.1 (Michaelis),[1] and since the P_H of the urine varies normally between P_H 4.5 to P_H 7 it is obvious that unless the reaction of the urine is P_H 6.1, the diastatic power will be decreased. The newer technique is to bring the urine's hydrogen-ion concentration to approximately P_H 6.1 by diluting it with a buffer solution of phosphates and then determining the diastase as in the ordinary method. A description of this method will be given elsewhere, but it should be pointed out that it can only increase a low reading of the ordinary method, and can never decrease it.

The normal number of diastatic units in urine lies between 6 and 30. Any increase is said to indicate pancreatitis, with the possible exception of cases of eclampsia, in which the diastatic power is said to be high.

In Table I are given the figures from a series of cases of acute rickets; all are high enough to warrant a diagnosis of pancreatitis. The mean of 17 cases is 154 diastatic units.

These results were controlled by the examination of a series of normal children of about the same age as the rickety cases; as will be seen from Table III, the results were all low. As some observers maintain that there is a general infection in rickets, series of septic cases showing no rickets, and with and without fever, were examined (Table III). It was also thought advisable to make control observations on a series of cases where there was bone erosion (Table III).

* A report to the Medical Research Council.

All these cases gave low results. The diastase was found to be higher than normal in three cases of acute osteomyelitis —namely, 66, 50, 66 units—but this was very much below the mean of the rickety cases, which was 154. Convalescent cases of rickets, as will be seen from Table II, did not show this high diastatic power. They gave an average of 14.5 units.

TABLE I.—*Acute Rickets (17 Cases).*

Age.	Sex.	Diastase.	Fat in Faeces per Cent.	Age.	Sex.	Diastase.	Fat in Faeces per Cent.
2	M	100	65	2	F	150	78
3	M	200	80	4½	F	70	50
3	M	200	89	2	M	200	90
9/12	F	200	90	9/12	F	150	79
1	M	100	70	1	M	100	89
2	M	150	80	1½	F	100	60
2½	M	200	60	2	M	200	65
4	F	150	70	4	M	150	78
3	M	200	80				

Total diastatic units ... ... 2520. Mean ... 154.
Total fat in faeces per cent. ... 1273. Mean ... 75.

TABLE II.—*Rickets, Subacute or after Treatment (8 Cases).*

Diastase.	Fat in Faeces per Cent.	Remarks.
10	20	No. 1 in Table I, six months after.
25	25	No. 2 in Table I, six months after.
33	56	No. 3 in Table I, three months after.
7	25	No. 4 in Table I, two months after.
7	20	No. 5 in Table I, two months after.
7	28	No. 7 in Table I, twelve months after.
22	38	After six months' treatment.
20	30	After three months' treatment.

TABLE III.—*Controls for Diastase and Fat in Faeces.*

Condition of Cases.	No of Cases Investigated.	Average Diastase.	Average Fat in Faeces per Cent.
Normal children	10	16	20
Septic cases, with no fever ...	6	20	22
Septic cases, with fever	7	13	—
Bone erosion, mainly new growth involving bone	9	10	—

2. *The Fat Content of the Faeces.*

Normal dry faeces contain 25 per cent. of fat by weight at a maximum. Any increase above this is usually regarded as pathological. If the increase consists mainly of unsplit fats it is assumed that the pancreatic lipase is at fault, and pancreatitis is suspected. It is, of course, essential that there be no great increase in the fat diet, otherwise the high faecal fat content might be explained by a simple passage through the intestines of an excess of fat in the diet.

The rickety cases investigated were on ordinary diet, and the faeces were collected and dried very carefully. The fat content was then estimated by means of the Schmidt-Werner process. Table I shows that in all the faeces obtained from cases of acute rickets the fat content was greatly increased—a mean of 75 per cent. against the normal of 25 per cent.

Controls.—This result was controlled by examining a series of non-rickety children of about the same age and on the same diet; it will be seen from Table III that all the readings were low—an average of 20 per cent. As in the case of the diastase reactions, convalescent cases did not show this high faecal fat content (Table II).

3. *Acidosis in Rickets.*

The urine of 10 cases of acute rickets was examined for acetone bodies, and it was found that 9 cases gave quite a strongly positive Rothera's test. The other case only gave a very faint pink colour. Of the 9 cases, 6 gave a very faint ferric chloride test for aceto-acetic acid, but both the Rothera and ferric chloride tests became negative after a few weeks of treatment.

In a recent article Dr. Amy Hodgson[2] reported the results of a detailed analysis of the urine of 13 children with active rickets; she found marked evidence of an acidosis, as determined by the ammonia ratio—that is:

$$\frac{\text{NH}_3 \text{ per cent.}}{\text{N}_2 \text{ per cent.}}$$

The mean of her 13 cases was 14.3 per cent., as compared with 6.2 per cent. for a series of normal healthy children.

Without entering into a discussion of the exact pathology of the acidosis frequently found in children, it seems clear from these observations that rickets must be added to the list of diseases in which it occurs.

Consideration of Results.

The results obtained—namely, a high diastatic power of the urine and a high faecal fat content—suggest a diagnosis of a pancreatic lesion. The large amount of unsplit fat in the faeces shows that it must be associated with reduced secretion of pancreatic juice. Exactly what bearing these facts have upon the pathology of rickets it is difficult at first sight to say.

It has been taught for some long time past that the fatty acids, when liberated from the neutral fats by the action of the pancreatic lipase, form soaps with the metallic bases, especially with calcium; the resulting calcium soap, being soluble in bile, is absorbed. If this is the most important mode of calcium absorption, the importance of inadequate pancreatic secretion at once becomes obvious, because there would be poor fat digestion and, consequently, poor production of fatty acids. This would lead to deficient calcium absorption, and therefore to calcium starvation, which has been stated to occur in rickets.

This theory is being tested by noticing the effect of fatty acids on calcium absorption, both in rickety and in normal children. The experiments are in too early a stage yet to warrant a definite statement being made. Since there is a deficiency of pancreatic secretion a new line of treatment suggests itself—namely, that of giving a pancreatic extract which contains lipase. A number of cases are now being treated with this extract in the hopes that it will digest fats in the intestine, and thereby give an adequate amount of free fatty acids for the absorption of calcium.

It is interesting to note that in Germany cases have been treated with calcium soaps of fatty acids.[3] The scientific basis of this mode of treatment was not stated, but the views put forward in this paper seem to offer an explanation.

It is quite likely that this pancreatic lesion is the result of an intoxication, probably bacterial in origin. Investigations are now in progress to determine, if possible, the source of the intoxication and infection.

In conclusion, I have to express my thanks for much very valuable advice and criticism from Professor McIntosh and Dr. E. L. Kennaway, and also to acknowledge the kindness of the surgeons of the Royal National Orthopaedic Hospital for allowing me to investigate their cases.

Summary.

1. The diastatic power of the urine is greatly increased in rickets, the mean of 17 cases being 154.

2. The diastatic power falls to normal during convalescence.

3. The fat in the faeces is increased in rickets, the mean being 75 per cent., as compared with 20 per cent. for a series of non-rickety children.

4. From the above observations it is suggested that there is a pancreatic lesion in rickets, and a possible explanation of its bearing on the disease is given—namely, that there is a poor production of fatty acids, and consequently a poor absorption of calcium.

5. Attention is called to the acidosis of rickets.

6. In consideration of the above results cases of rickets are being treated with pancreatic extract containing lipase.

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SOME OBSERVATIONS ON POST-ANAESTHETIC COMPLICATIONS.*

BY

G. F. R. SMITH, M.B., B.S.LOND., M.D.LIVER.,

HONORARY ANAESTHETIST TO THE ROYAL INFIRMARY, LIVERPOOL, ETC.

OBSERVATIONS have been made upon 571 cases of general anaesthesia, drawn from the Hospital for Women and the Royal Infirmary, Liverpool, attention being particularly focussed on three common post-operative complications—namely, chest trouble, flatulence, and vomiting. In the series there have been four deaths—one from operative shock, one from bronchopneumonia, one from acidosis, and one, which occurred on the fifth day after a laparotomy for inoperable carcinoma, may be laid to the door of both surgeon and anaesthetist, as there were some symptoms of acid intoxication.

Among the gynaecological cases there were 221 major abdominal and 220 minor vaginal operations. Warm ether, with where necessary a small addition of chloroform, was given to the former, and open ether to the latter. The chest complications for both classes of case amounted to 22—that is, 4.5 per cent.; serious trouble, such as bronchitis and bronchopneumonia (including the death already mentioned), occurred five times—1.1 per cent.; the remainder, coughs without physical signs, soon cleared up when a mixture containing calcium chloride and liquor atropinae was given. The major operations showed a morbidity of 7.5 per cent., and the minor of 2.2 per cent. I think it will be admitted that 1.1 per cent. of serious pulmonary disease after operation is low, and it may be attributed to the use of warmed ether vapour, as prior to its introduction at the Hospital for Women lung complications were considerably more frequent. It does not, however, entirely prevent the likelihood of bronchitis if given to a patient already suffering from a "cold," and where there is any acute catarrh of the respiratory tract a general anaesthetic, except for emergencies, is contraindicated, though I would add that in such cases chloroform is justifiable.

The usually accepted causes of ether bronchitis, such as septic mouths, draughts, chills from sweating, etc., are guarded against as much as possible, and all masks, gauze, and face pads are sterilized at the Hospital for Women, so it is difficult to account for this 4.5 per cent., but in 11 out of the 22 cases the following possible factors were noted: pre-operative cough, some cyanosis during part of the operation, prolonged operation, the patient required more than the usual amount of ether, light anaesthesia, and pulling on the peritoneum.

To illustrate the possibility of prophylaxis I would mention the case of a very stout woman, aged 36, who, after an operation for removal of both appendages, had considerable bronchitis for a week; two months later it was found necessary to perform a total hysterectomy, but after three days' preoperative treatment with the mixture already mentioned she recovered from the anaesthetic with neither cough nor vomiting. A further practical point is that when morphine is used along with atropine, 1/150 grain of the latter is sufficient to prevent salivation, and does not cause the irritating dryness of the mouth so frequently complained of after 1/100 grain.

Flatulence occurred twenty-four times in the series, which gives a percentage of 5.4, but here it must be noted than an important alteration in the treatment prior to operation took place during the observations. To the first 266 cases 1 oz. of castor oil was given thirty-six hours before, an enema eight hours before, 1/4 grain morphine and 1/100 grain of atropine one hour before, and a very light liquid diet on the day preceding operation. Here the percentage of flatulence was 6. The following 175 cases were given castor oil as before, but the enema was omitted except for those requiring perineal repair, the dose of morphine was lessened to 1/6 grain, and a more generous diet allowed—ordinary food the previous day, and a breakfast of tea and toast, followed by 1 oz. of syrup of glucose one hour before operation. Under this régime flatulence occurred in 4.5 per cent. only. It should, however, be added that the ward sister, without whose most intelligent co-operation this note could not have been written, considers the improvement in this respect to have been greater than is shown by the figures, and her opinion is corroborated by a sister at the Royal Infirmary, whose experience after a similar change in preparation is that "the patients are much less distended and uncomfortable."

Vomiting, the commonest and most distressing complication we have to deal with, was met with 91 times in 441 cases, major operations showing 27.6 per cent. and minor operations 12.7 per cent., the percentage in all cases being 20.1. These figures include all grades of vomiting, and require modification; 350 women were not sick at all, which I must confess surprised me; of the remainder, 52 (11.7 per cent.) only brought up a little mucus once or twice directly after return to the ward, 17 (3.8 per cent.) vomited several times, but were comfortable within six hours of the operation, and 32 (7.2 per cent.) continued to vomit for periods varying from ten hours to three days. Here the change in preparation caused disappointment, as the total vomiting percentage increased from 17.2 to 25.1 instead of showing the decrease which had been hoped for. There is, however, one scrap of comfort in that the increase occurred in the slight and moderate forms of sickness; the severe class showed a decrease from 6 to 3.4 per cent.

There is not time to analyse completely the 130 cases on which notes have been taken at the Royal Infirmary, but a comparison may be made, as both "open" and "close" methods of anaesthetization were in use. Where ether was given on an open mask vomiting took place in 51.2 per cent. of cases; in 5 per cent. it was of a serious nature; Ormsby's inhaler, on the other hand, only produced 32 per cent., but in 10 per cent. the sickness continued for more than six hours. This is contrary to the generally accepted belief that "open ether" causes less vomiting than "close," but it bears out the opinion of many anaesthetists that in the hands of an expert the despised bag has much to commend it.

Whether the increased percentage at the Royal Infirmary, where the figures are more than double those at the Hospital for Women (43.8 per cent. compared with 20.1 per cent.), is accounted for by the fact that at the former an enema is given and no aperient, or that the anaesthetics are largely given by the students, I am not prepared to say, but the difference is rather striking.

The morbidity rates disclosed by this series of observations are, it must be confessed, disappointing, but they are brought forward with the idea of interesting others enough to find some alteration of technique which will eliminate these three common sources of trouble and further improve what may be called the handmaiden of surgery.

May I close by expressing my thanks to Dr. Gemmell and Messrs. Bickersteth and Jeans, from whose clinics these few facts have been extracted.

* Read at the Liverpool Medical Institution on October 27th, 1921.

THE DIAGNOSTIC VALUE OF THE PLANTAR EXTENSOR RESPONSE.

BY

E. L. FOX, M.D., M.R.C.P.,

PHYSICIAN TO THE SOUTH DEVON HOSPITAL.

FROM the time when this sign was first described by Babinski we have been taught and have reverently bowed the knee to its organic significance. From time to time some diffident suggestions have appeared that possibly it might be liable to variation, but I have never seen any definite statement impugning its reliability. I know the difficulty of sometimes obtaining it, especially if the foot is cold, but that its variability may be great at different times in the same patient I certainly had not seen before.

I have under my care, in the South Devon Hospital, a marine who was sent in by the pension authorities. He was first admitted in December, 1919, with a provisional diagnosis of spinal tumour.

He had over eighteen years' continuous service, with no history of any previous illness. His war service extended for nearly three years, with four months' service ashore at the Cameroons. He complained chiefly of intense pain in the back, with extreme rigidity of his legs which quite prevented him from walking. At night he frequently had "war dreams," in which he cried out and disturbed the ward.

The rigidity was very marked, and I could only flex his knees with the greatest difficulty. The patellar reflexes were very active; ankle clonus was present on both sides; the plantar response was always readily obtained, and was consistently extensor in type. He had anaesthesia extending equally and completely over both legs, but above that sensation

was normal. He seemed to me to correspond fairly well with the cases of astasia one met with during the war.

He gradually recovered, and was discharged in June, 1920, for treatment and training at a convalescent camp. There he remained until one day he had a fall, when all his old symptoms reappeared, and in March, 1921, he was readmitted to the South Devon Hospital. His condition then was by no means so severe as when first seen. The rigidity, however, was still extreme, ankle clonus just as readily obtained, and the extensor response the same as before.

His recovery this time was very slow, and he has only just reached a condition in which he is nearly ready to resume training.

The extensor response for a long time never varied, then as the rigidity of the legs decreased it also became less marked; then it would be present on one side and not on the other; then it would be absent on both sides in the morning, returning if he was tired in the evening.

Treatment has not availed him much. Electricity in all forms failed to help him. Hot-air baths certainly seemed to benefit him, as the rigidity was less after them, and his recovery has been more rapid since they were started.

His war history was not beset with any startling incidents; the only event which has probably had some bearing on his disorder was that once whilst coaling at sea a friend of his had both legs badly crushed.

Meanwhile the man has been discharged by the pension authorities as suffering from disseminated sclerosis, which was neither caused nor aggravated by war service, and I feel that this has been brought about because at one time the plantar reflex could always be obtained, and was consistently extensor in type.

ENCEPHALITIS LETHARGICA AFFECTING THE NUCLEI OF THE MID-BRAIN IN AN UNUSUAL MANNER.

BY

WILLIAM CALWELL, M.D.,

PHYSICIAN TO THE ROYAL VICTORIA HOSPITAL, BELFAST.

THE following case is of interest, for though the symptoms were obscure it seems probable that the acute illness in June was an attack of encephalitis lethargica.

A married woman, aged 54, under the care of Dr. McDowell, Belfast, had been healthy and had a healthy family. About the end of June, 1921, she had an acute illness, of which the chief symptoms were vomiting, dirty tongue, etc. This condition lasted a fortnight, and at first no nerve signs were evident. She became weak, giddy, with indistinct vision, which, however, varied. The vomiting stopped, but when she tried to stand she felt giddy, as if falling forwards or backwards. On October 21st the general clinical examination revealed nothing abnormal: the urine was normal; there was no high blood pressure; she was perfectly intelligent, even sharp; the motor and sensory systems were normal. She had no difficulty in finding a word, but considerable difficulty in articulation; she had to force her words, and said "wor" for worse, so that at times her speech was a little confluent, slurred and clipped, and at other moments slightly jerky and nearly explosive. There was a want of tone in the feel of the muscles of the limbs, which hardly seemed to be accounted for by the confinement; the plantar reflexes were absent, the knee-jerks were present but not exaggerated: no other muscle jerks were elicited.

In regard to the eyes, there was a slight droop of both upper lids, but this was said to be natural; the left pupil was larger than the right; both reacted to light and to accommodation somewhat sluggishly. When she looked to the left there was lateral nystagmus, when to the right vertical nystagmus, somewhat slow in character. On November 9th, when she looked to the left, the nystagmus was also vertical; but on looking to the left and a little upward a fine rapid lateral nystagmus was visible. With the ophthalmoscope the discs were found to be normal, but a constant slow, vertical, fine nystagmus was seen. The iris did not show the local shadow reaction test.

Her hearing was perfect; she thought that she heard at times "too much," meaning that she heard what was not intended for her to hear. When she got up she had to hold on to something, like the foot of the bed, and have her other arm taken; deglutition was normal.

The most probable explanation, as has been said, would appear to be that the original attack was encephalitis lethargica. There were no signs of cerebral tumour; she presented no signs of vascular degeneration; syphilis may be excluded by her previous good health, her healthy family, and a negative Wassermann test (blood). The site of the lesion is localized; the cortex down to the internal capsule can be excluded, also the two large basal ganglia, and the cord. The nuclei in the roof of the mid-brain, with their intricate and complicated ramifications, possibly the red nucleus, and Deiters's nucleus in the medulla, are involved. The connexions between the tectum nuclei, the cerebellum, the vestibular nucleus and so with the semicircular canals, and the many tracts to the cord, would seem to explain the vertigo, the loss of tone of the muscles, the nystagmus of the bizarre type, the unequal pupils, and possibly the ptosis. The speech could be explained by the cerebellar asynergy, and as part of the loss of control of the muscles showing itself subjectively in the vertigo. If Deiters's nucleus be affected the nuclei of the nerves for the muscles of articulation are not far off.

We have an analogy in the condition left by encephalitis lethargica in the globus pallidus, simulating paralysis agitans. In both instances all the cells affected are of the motor type, and so follow the rule.

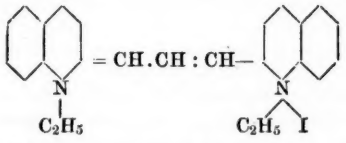
THE ANTISEPTIC PROPERTIES OF CYANINE DYES.*

BY

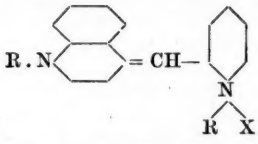
C. H. BROWNING, J. B. COHEN, AND R. GULBRANSEN.

(From the Department of Organic Chemistry, Leeds University, and the Pathological Department of the University and Western Infirmary, Glasgow.)

THE group of compounds, a few of which form the subject of the present communication, are known as isocyanines and carbocyanines, and are prepared by condensing a mixture of quinoline or quinaldine alkyl iodide with a quinaldine alkyl iodide in presence of an alkali with or without formaldehyde. These substances are used as photographic sensitizers. Thus the isocyanine known by the trade name of "sensitol green" is produced by the condensation of quinoline methiodide with p-tolu-quinaldine methiodide. "Sensitol red" is produced similarly by the condensation of two molecules of quinaldine alkyl iodide with one of formaldehyde under the influence of alkali. According to Mills and Pope [2] the constitution of "sensitol red" is represented by the following formula:



To this group of compounds, which have been studied by Mills and Pope and Mills and Wishart,[3] the generic name of "carbocyanine" has been given, whilst the "isocyanine" will be represented by the following general formula:



in which R stands for an alkyl group.

Antiseptic properties were determined, as previously described,[1] by adding to 1 c.cm. of culture medium varying amounts of the substances to be tested along with 0.1 c.cm. of a 1 in 1,000 dilution in saline of a twenty-four hour culture of the organisms (*Staphylococcus aureus* or *B. coli*) in peptone water. As test media (*a*) 0.7 per cent. peptone water with a P_H value of about 7.2, and (*b*) undiluted ox serum (previously heated at 56° C.). The mixtures were then placed at 37° C., and were examined after forty-eight hours for the presence or absence of growth, which was determined in each instance by the appearance of turbidity in the fluid, and also by subculturing a loopful on agar.

The compounds tested were "sensitol red," "sensitol violet," and "sensitol green." These names do not describe the colour of the dyes, but the part of the spectrum to which a photographic plate is rendered specially sensitive after treatment with the compounds in question. Owing to the relative insolubility of sensitol red and sensitol green, stock solutions of 1/2 per cent. of the dyes in 50 per cent. alcohol were prepared, and these were further diluted with water as

* This work was carried out with the support of the Medical Research Council.

required. The following figures represent the general antiseptic values obtained in repeated tests:

Substance	*Staphylococcus aureus* in		*B. coli* in	
	Peptone Water.	Serum.	Peptone Water.	Serum.
Sensitol red	1 : 4,000,000 + 1 : 2,000,000 −	1 : 1,000,000 + 1 : 200,000 −	1 : 1,000 + * ? −	1 : 10,000 + 1 : 2,000 −
Sensitol violet	1 : 100,000 + 1 : 10,000 −	1 : 40,000 + 1 : 10,000 −	1 : 1,000 + ? −	1 : 4,000 + (1 : 1,000 inhibition)
Sensitol green	1 : 400,000 + 1 : 200,000 −	1 : 1,000,000 + 1 : 100,000 −	1 : 10,000 + 1 : 5,000 −	1 : 50,000 + 1 : 10,000 −

* Precipitation of dye.
\+ = Abundant growth visible to the naked eye.
− = Sterile, as shown by subculture.

Accordingly, the following conclusions may be drawn as regards the cyanine group of dyes, which, so far as we know, have not been examined hitherto for their antiseptic properties.

1. Certain of the cyanine dyes are extremely potent antiseptics—for example, sensitol red for staphylococci in watery medium.

2. Selective antiseptic action as between staphylococcus and *B. coli* is exhibited to a higher degree by certain of these dyes—for example, sensitol red—than by any other compound hitherto investigated, the ratios of the sterilizing concentrations probably being greater than 2,000 to 1 (with crystal violet the ratio is 500 to 1).

3. Sensitol green is the most active of these dyes both in serum and watery medium for *B. coli*. Also, in the case of *B. coli* the antiseptic action in serum is more intense than in watery medium.

Observations on the toxicity of these compounds for mammalian tissues and on the action of further members of the series will be recorded later.

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THE INTERPRETATION OF SYMPTOMS IN DISEASE OF THE CENTRAL NERVOUS SYSTEM.

ABSTRACT OF THE GOULSTONIAN LECTURES, DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS,

BY

ANTHONY FEILING, M.D., F.R.C.P.,

PHYSICIAN, HOSPITAL FOR EPILEPSY AND PARALYSIS, LONDON.

LECTURE I.

THE lecturer introduced his subject by saying that in conversation with many doctors he had been struck by the lack of comprehension of those main principles of neurology which were so essential to any accurate diagnosis of disease of the central nervous system. There was here a gap in knowledge, the more remarkable when contrasted with the appreciation of the symptoms and signs of disease in other systems of the body. It could only proceed from some defect in teaching, and therefore he would attempt in these lectures, which were based upon the general experience and the painstaking observations of many workers, to give an epitome of the general principles of diagnosis and an interpretation of some of the more important and characteristic symptoms of disease of the central nervous system. In the word "symptoms" he included those signs of disturbed function which were to be obtained only by the observer.

It had been pointed out by Head and others that every disease of the central nervous system manifested itself by disturbance of function, hence the absurdity of trying to classify such diseases as entirely either organic or functional. The observer was inevitably thrown back upon the disturbance of function as the basis of investigation. The first question which arose was as to the function or functions which were disturbed, and consequently the first endeavour must be to determine the physiological basis and anatomical situation of the disturbance. He took as an example a patient who had a useless arm; in such a case inquiry must be directed to determining at what level of the motor pathway between the cerebral cortex and the muscles the damage lay. Having established the physiological, and if possible the exact anatomical, diagnosis, the question of the pathological cause had to be settled.

The statement was sometimes made that one physical sign was worth many symptoms. While this might be true in many cases, exception should fairly be made in disease of the central nervous system, where it was sometimes possible to make a shrewd guess at the nature of the disease by a careful examination of the subjective symptoms described by the patient. Careful inquiry into the details of many subjective symptoms would provide a useful clue in the diagnosis. Students should be encouraged to inquire into their case histories. In many cases a diagnosis could be made on the history alone. The subjective symptoms of the patient were of great diagnostic value in many diseases of the central nervous system, of which disseminated sclerosis was but one example. It was hardly necessary to emphasize the importance of a complete physical examination of the case. Mistakes were more frequently made from inadequate examination than from any other single cause. The examination should not be confined to the nervous system but include other systems.

The Significance of Pain.

Pain, a symptom common to many diseases of the central nervous system, should be regarded as an exaggerated response by an irritated nerve. The grey and white matter of the central nervous system was insensitive to the ordinary forms of stimuli, and pain in this connexion was produced chiefly either by disease of the meninges of the brain or spinal cord, or by some pathological process which could compress or stretch them, or some lesion which directly related to the sensory afferent neurons in their course outside the spinal cord or brain and within the dural sheath, such lesion being usually of meningeal origin.

Increase of tension was a common cause of pain. Among the characteristic features of pain in increased intracranial tension, the first, generally speaking, was its paroxysmal character, the paroxysms being excited by any sudden form of exertion or change of posture. Mental activity would not uncommonly precipitate a paroxysm of pain. Even when the pain was constant paroxysms of intenser pain occurred. The position of the pain was variable. At first it might have a more or less close relation to the lesion which caused it, but more frequently such localization was lacking. The frontal and occipital regions were the parts of the head where the pain was most commonly felt. It did not generally have the throbbing character which was found, for instance, in arterial hypertension, and generally it was relieved by rest in the recumbent position and sometimes by lumbar puncture.

He dealt next with pain in the face due to intracranial tumours. He had seen two cases of pituitary tumour where the distinction between pain in the head and pain in the face was absolutely definite and perfectly well appreciated and described by the patient. Other characteristic forms of pain were those found in lesions in the posterior nerve roots, in cases of syphilis of the central nervous system, and especially in tabes dorsalis. In making an early diagnosis the exact character of the pain assumed great importance. Farquhar Buzzard had given a good description of the "lightning" pains in tabes dorsalis. The pain of tabes dorsalis or of syphilitic disease of the central nervous system did not as a rule radiate in the long axis of the body or follow the course of the nerve distribution. The pain was typically described as stabbing or cutting, and the sensation, as Buzzard said, was as if some sharp instrument were forced into the skin at a right angle to the long axis of the limb. Further, the actual area in which any one pain was felt was usually circumscribed. The lecturer also touched upon pain of central origin, and repeated Gordon Holmes's description of pain of central origin apparently arising from disease of the cervical part of the spinal cord, and also in disease of the posterior lateral part of the optic thalamus.

It had been his endeavour to show how a study of the character and distribution of the pain in disease of the central nervous system could help to localize the site of the lesion and also to elucidate the nature of the disease present. Obviously in this matter it was necessary to depend largely on the co-operation of the patient, which was sometimes difficult to obtain, especially if pain had existed for a long time. The longer the pain was experienced the wider became

its distribution and the feebler the patient's resistance. Even the most stolid and heroic person could not prevent the tendency whereby repeated attacks of pain or continuous pain produced this inevitable result. Hence the need to go back to the early symptoms which were unclouded by the process of auto-suggestion.

Other Subjective Symptoms.

While pain was the most urgent and most frequent subjective symptom for which advice was sought, there were others which had an importance not always adequately realized. To such subjective symptoms the useful but ugly term "paraesthesia" was generally applied. These abnormal sensations formed an important part in the symptomatology of many diseases of the central nervous system. Such symptoms might be called functional, but it was important not to be led, in the absence of other and more definite reasons, into confusing this diagnosis with one of hysteria. Increasing experience would render it possible to restrict more and more the number of cases in which the observer would be content with such a diagnosis. He did not need to speak of the facility with which subjective sensations, such as numbness and tingling, were ascribed, often correctly, to neuritis, whether peripheral neuritis or multiple neuritis of toxic origin. When it was remembered how lesions of the central nervous system itself could be responsible for severe pains it was all the more necessary to envisage the possibility of central origin for these other subjective symptoms. There were two diseases in which these symptoms were very important—namely, disseminated sclerosis and subacute combined degeneration of the spinal cord. He would emphasize the early occurrence of these purely subjective disturbances. There were, of course, many other conditions in which abnormal subjective symptoms formed the earliest indications of the disease, notably syphilis of the central nervous system.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

SLIPPING RIB.

IN view of the interesting article by Mr. R. Davies-Colley on slipping rib (March 18th, p. 432) the following case, which I had noted as "recurrent dislocation with arthritis of costo-sternal joint," may prove of interest.

A Canadian soldier, a man of very good physique, came under my care in June, 1918. He complained that strong forward displacement of the right shoulder was frequently accompanied by pain alongside the sternum, and said that he believed the inner end of the rib slipped out of place. Physical examination demonstrated this beyond doubt; in addition to the dislocation, there were swelling and persistent tenderness, the joint in question being the third right chondro-sternal.

Resection seemed to me to be preferable to a fixation operation, particularly in view of a probable arthritis. The patient agreed, and three-quarters of an inch of the cartilage was resected under local anaesthesia. Villous fringes were found projecting into the joint. When seen nine months later the patient expressed himself quite cured; he was able to "get his full chest expansion again"—it had been prevented by the nagging pain he always experienced at the site of dislocation.

There is no statement in my notes as to preceding injury; it is difficult to be sure after this lapse of time, but my impression is that no such history was given. I personally have been subject to slipping forward of the ninth left cartilage on acute flexion of the trunk on three occasions and am positive the condition cannot be traced to a trauma in my case.

London, W.1. C. JENNINGS-MARSHALL.

I READ Mr. Davies-Colley's article on slipping rib with interest (p. 432), for it bore out precisely my own experience of these cases, of which I have seen several. They have all been in females, and I have failed to find any convenient reference to the condition, though I am sure that I had read of it somewhere and was thus able to recognize the lesion. The patients have, two of them, been unusually thin, with very flexible lower ribs, but not all of them were delicate women. One case interested me, because removal of the spleen had been advised. In this case the lesion had been originally produced by the patient, when in an almost squatting position, lifting a heavy box with both hands from the ground. The pain was instant and agonizing and a tumour was felt due to the hyperposition of the lower over the upper rib. For some days tenderness remained over the site of the injury. My three cases have all been left-sided. I have found that if the patient can lie quite flat on her back, take her courage in both hands, and a deep breath, the rib slips back. Abdominal massage to the muscles, and feeding up the over-slim ones, produced improvement; but the stronger patient I have not heard of again, for she left for abroad much relieved at keeping her spleen.

London, W.1. F. JOHN POYNTON, M.D., F.R.C.P.

THE following case may be of interest in connexion with Mr. Davies-Colley's note on slipping rib:

Miss A. B., aged 30, worked in a munition factory during 1917 and 1918. It was customary there to carry shells with the weight supported by the left side. Since demobilization she had complained of pain in her left hypochondrium. The pain was constant, but varied in intensity; it was relieved by rest in bed, but never failed to reappear after exertion. In addition there was much constipation and frequent attacks of colitis.

As enteroptosis seemed marked a belt was ordered; this relieved the symptoms of ptosis, but the pain persisted. Being anxious to eliminate any bowel trouble before investigating the costal cartilages, I sent her to Dr. F. A. Roper of Exeter for his opinion and for an *x*-ray examination. He confirmed the enteroptosis, but could find no evidence of stricture. Moreover, he was much impressed with the definite localization of the pain to the tip of the eleventh rib. Resection of the end of this rib was done early in February, and has apparently removed the pain.

Although occurring in a floating rib, the condition seems analogous to Mr. Davies-Colley's cases.

Ilfracombe. H. K. V. SOLTAU.

PRIMARY COLECTOMY FOR ACUTE INTESTINAL OBSTRUCTION IN A PATIENT AGED 70.

M. F., a lady aged 70, had been suffering from constipation, with severe colicky pains and vomiting, since September, 1921. In February, 1922, she commenced to vomit, the vomit ultimately becoming faeculent. She was removed to a nursing home, and the condition subsided, but a week later acute intestinal obstruction supervened. The caecum could be felt to be greatly enlarged, but nothing more was found on examination. The abdomen was opened: the caecum was enormously distended; it could be easily lifted out of the abdomen, but midway to the hepatic flexure the mesentery was shorter, so that a certain amount of volvulus was produced. At the splenic flexure was a marked constriction due to malignant growth, the distal end of the colon being contracted to the size of the small bowel. Resection of the growth was decided upon; 8 in. of the colon were removed, and end-to-end union established by two rows of linen thread sutures; difficulty was experienced owing to the great difference in the size of the two ends; no glands were felt in the omentum, and the abdomen was sewn up without drainage.

She passed liquid faeces immediately after the operation, and subsequently made an uninterrupted recovery, leaving the nursing home in twenty-four days after the operation. The growth had so obstructed the bowel by contraction that it only allowed a probe to pass through.

I am indebted to Dr. Bruce, who saw the case in consultation, and to my partner, Dr. T. Murray Newton, for his skilful help.

C. L. GRANVILLE CHAPMAN, F.R.C.S.Ire.,
Surgeon, Grimsby and District Hospital.

IN New York 145,000 children have received preventive treatment against diphtheria. Coincident with this effort to confer immunity it has been shown that there is an actual decrease in the number of cases and of deaths in diphtheria. The latter six months of 1921, as compared with the same period in 1920, show a reduction of the number of cases of diphtheria by 1,852, and of the number of deaths by 155.

British Medical Association.

CLINICAL AND SCIENTIFIC PROCEEDINGS.

METROPOLITAN COUNTIES BRANCH: HAMPSTEAD DIVISION.

A CLINICAL meeting was held at the Hampstead General Hospital on March 9th, when Dr. ANDREWS showed (1) a case of syringomyelia in a girl aged 20, and (2) a case of cutaneous angeioma of the neck, which was being treated with trichloracetic acid. Dr. GEORGE showed a case of enlarged cervical glands of some years' standing, probably due to chronic tuberculosis. Mr. CLIFFORD MORSON showed a specimen of horseshoe kidney, in which the connecting band consisted of renal tissue and contained an accessory calyx. Pyelograms of the case were also shown. Mr. SIDNEY BOYD showed: (1) A case of congenital spastic paraplegia in a boy aged 6, in which laminectomy and posterior rhizotomy had been performed last June. Prior to the operation the boy had never walked. He now walked and ran without support, and his mental condition had markedly improved. (2) A case of dislocation of the shoulder-joint, with separation of the upper epiphysis of the humerus, in a girl, aged 16, treated by open operation. Full movement had been restored to the shoulder-joint. (3) A case of pseudo-coxalgia. (4) Specimens of diverticulitis of the colon removed by operation and of complete rupture of the kidney, also removed by operation. (5) Skiagrams showing positive evidence of a gastric ulcer in two cases. The findings at operation corresponded exactly with the *x*-ray appearances.

Reports of Societies.

THE AFTER-RESULTS OF COLECTOMY.

IN the Subsection of Proctology of the Royal Society of Medicine on March 22nd a discussion took place on the after-results of colectomy performed for colon stasis. Sir C. G. GORDON-WATSON presided.

Sir BERKELEY MOYNIHAN was announced to open the discussion, but illness prevented him from attending. He sent a list of his cases of partial colectomy, including all those operated on up to the end of 1920, numbering 60 cases of primary colectomy and 8 of ileo-sigmoidostomy. Two colectomy cases died as the result of operation, and of the remaining 66 cases replies were received as to 43 (37 of colectomy and 6 of ileo-sigmoidostomy). Among the 37 cases the results were described by the patients or their doctors as "good," "very good," or "excellent" in 15. In all of these there was a gain in weight, no indigestion, flatulence, or discomfort, normal action of the bowels, and full capacity for work and enjoyment. These were all cases in which there had been gross mechanical difficulties, the caecum full, blue, soggy, dependent, and obstructed. Not all patients who had had this condition improved, but all who improved had had this condition. In 16 other cases the result was fair, better general health, but occasional discomfort, in some cases diarrhoea and in others constipation as badly as before, and no substantial gain in weight in any. In 6 cases the results were poor or bad, the patients remaining ill, weak, and miserable. Of the 6 cases of ileo-sigmoidostomy the result was good in two, fair in one, almost unimproved in one, and poor in two. In one of these last complete colectomy was afterwards performed, and though the early result of the operation was good, the patient was no better than before her first operation. In 17 of the colectomy cases and 5 of the ileo-sigmoidostomy cases the appendix had previously been removed without benefit, and 7 of this first category and 2 of the second improved as a result of the later operation. In 20 of the total cases there were constricting bands across the colon, just below the hepatic flexure; in 18 there was common mesentery to the ileum and ascending colon, with very loose and mobile caecum and colon, and in 14 there were adhesions round the caecum, appendix, and ileum.

Mr. E. R. FLINT of Leeds further described Sir Berkeley Moynihan's methods. Sir Berkeley Moynihan rarely practised complete colectomy; he held that the main seat of the disease was on the right side. Stasis was regarded in his clinic not as a disease in itself but as part of a nutritional disorder, probably arising from deficient or ill-balanced diet, the effect of which was felt by the colon. His successful cases were those suffering from mechanical interference, with thick, soggy colon and constricting bands. Stasis of this type could usually be differentiated from that seen in loose colon before operation. When this soggy type was present it might be expected that hemicolectomy would yield a good result, or, at the worst, that the patient would consider the operation had been worth while. When this type was not present he did not now perform colectomy. The mortality of hemicolectomy was about 2·5 per cent. If total colectomy gave good results they were no better than with hemicolectomy, while the unsuccessful results were worse than those after the partial operation.

Sir ARTHUR KEITH said that he was a little disappointed with the way in which the statistics had been presented. He protested against results being described as "good," "fair," or "bad," for these terms meant nothing. What should be stated was the extent to which a man who had had a colectomy performed upon him was able to do his accustomed work. Twenty years ago, after Metchnikoff's teaching had gone abroad, the view was widely held that the big bowel was an anomaly, and that the human body would be better without the colon. If that were the case there could be no question about the good results that would follow the removal of the colon. The speaker believed, however, that a good working colon was of great advantage to the human body. The problem now under discussion was whether a man was better without a diseased colon than with it. He had had the opportunity of examining colons excised by Sir Berkeley Moynihan and other surgeons, and he could affirm that in a very considerable percentage of cases the disease was so severe that there could have been no recovery of a normal bowel, but only a bowel in a fibrosed condition, and that being the case he would prefer to be without such a colon than with it. The more he worked at the bowel, small and large, the more impressed he became with the fact that the really important coat was neither the mucous nor the muscular, but the submucous, which was a great laboratory wherein the food absorbed was turned into a condition fit to pass into the blood. Out of 15 colons excised by Sir Berkeley Moynihan which he had seen, 10 or 11 were of the soggy type in which the muscle coats were inflamed, and it was a problem which he would not attempt to answer as to what would have happened to the patient had such a colon, which was both paralytic and inflammatory, not been excised. There was no doubt that the alimentary canal from end to end had a greater capacity for repair than any other structure in the body; he knew of nothing else with such a plastic and spontaneous power of bringing about union. Another group of cases, distinct from soggy colon, was one of which he had had few examples from Sir Berkeley Moynihan, but many from other surgeons, and which showed pigment-cell changes. The problem here was with regard to the enormous pigmented cells. Not much information was available with regard to this condition, although experimental methods were now being applied to its elucidation, and some valuable work had been done on these lines by McCarrison. Another question of interest arising out of this discussion was the modification of the small bowel after colectomy. He had seen a case in which, ten years previously, the large intestine had been short-circuited, the small intestine opening into the sigmoid. He found that the large bowel had not been entirely thrown out of function by short-circuiting: it did not function in the ordinary way, of course, but it was evidently impossible to keep the large bowel from making the attempt to do its work. The most remarkable thing, however, was the marvellous changes which had taken place in the small bowel. Externally it had become like the large bowel. Its diameter was twice the normal, its coat twice the thickness, and its length one-third of what it was originally. The average length of the small bowel was 22½ feet; in this individual, who had had the large bowel short-circuited, it was 7¾ feet. Finally, he wished to know what happened in cases of colitis or intestinal stasis which the surgeon refused to treat.

Dr. A. F. HURST said that the fact that intestinal stasis should be regarded as a subject for discussion in a section of surgery was something of a disgrace to medicine. He believed that colectomy was rarely, if ever, indicated for intestinal stasis in the absence of signs of gross organic disease. Certain statistics from Guy's Hospital showed that although 37

colectomies were performed from 1904 to 1908, and 50 from 1909 to 1913, the operation since then had become increasingly rare; only one such operation was done in 1920, and none at all in 1921. From these statistics the mortality of the operation appeared to be 16.5 per cent. He had never known a patient die from intestinal stasis, and therefore he thought it never could be justifiable to recommend complete colectomy, which had a mortality of somewhere between 8 and 33 per cent., even in the most experienced hands. He had often been appalled to see how light-heartedly colectomy was recommended. It appeared to be forgotten that medical treatment, including baths, dieting, and intestinal lavage, had its place in intestinal stasis. In some cases where colectomy was performed on patients suffering from such conditions as Raynaud's disease quite extraordinary immediate improvement was brought about, but there was an ultimate return to the old condition. He believed that this was due to the bacterial activity normally present in the colon and ascending colon spreading, after removal, into the ileum, which became practically a new colon, so that in a short time the old symptoms returned. The majority of cases of intestinal stasis which were treated with sufficient perseverance by non-surgical measures got well, and even in the small number in which no improvement followed medical treatment the high mortality of operation and the uncertainty of relief made it doubtful whether this operation should ever be resorted to in the absence of gross organic disease.

Dr. VICTOR PAUCHET of Paris sent a communication in which, after describing total colectomy as "Arbuthnot Lane's operation," he said that if therapeutic progress was to be made it was not sufficient for experienced surgeons to point to splendid results achieved, but they must draw attention also to possible accidents and explain their causes in detail. Total colectomy was still a very serious operation, and its results were not uniform. He had himself performed 122 operations of short-circuiting, with 8 deaths; 52 total colectomies, with 6 deaths (4 due to parting of the suture and 2 to heart failure); and 22 right-sided colectomies, with one death. Of the total colectomies 20 were performed in two stages, 17 following short-circuiting and 3 following right-sided colectomy. He had never had a fatal result with the two-stage operation. It should be possible in future by eliminating avoidable accidents to reduce the mortality of operation to 4 per cent. At present out of 10 colectomies 9 operative successes might be reckoned on, and one death; and of the 9, 3 might be classed as very good results, 3 as average or satisfactory, and 3 as showing little or no improvement. For some months after total colectomy it was important to ensure regular evacuation of the intestinal contents by liquid paraffin.

Sir W. ARBUTHNOT LANE declared himself in entire agreement with Dr. Hurst that colectomy was due to the hopeless ignorance and incompetence of the physician, and he was glad that Dr. Hurst had recognized it. Colectomy should have no place in surgery. Colonel McCarrison's name had been mentioned that evening. Colonel McCarrison had served for nine years in the Himalayas. During that time he had done over 400 capital operations every year, and he had never seen one case of dyspepsia, one of ulcer of the duodenum, one of appendicitis, one of colitis, or one of cancer. He would like the physicians to think that over. There was no such thing as cancer in uncivilized communities, apart from the consequence of such surface irritations as the scraping of the head by the Chinaman. He wished to state emphatically that he had never laid himself out to obtain favourable statistics at the expense of the patient's interests. If he had tried to interest the medical profession in the beneficial results of operation by publishing records showing a large proportion of success with a minimum of mortality he would have confined colectomy to those cases which were commonly called good surgical risks, but such a course would have been fatal to his object. He had taken no chances. He had been careful not to be held blameworthy in this matter. They all knew that the cases calling for such a radical procedure as colectomy were usually very ill. The cases had been treated medically for a long period, frequently operated on for various end-results, and in a considerable proportion of cases there were other diseases complicating stasis. One case in which he had been called upon to operate was that of a Canadian soldier, seen by forty surgeons in Toronto who would not operate on him, told at the Mayo Brothers' clinic that Lane of England was the only man who could cure him, and sent over to London, accompanied by an escort, as a result of a fund raised on his behalf in Canada to pay the man's expenses and the surgeon's fee (which latter he did not accept). The man was operated on, returned to Canada well, accompanied by his escort, and was now doing work in the backwoods. It was all very well to tell him that people who were left alone did not die. Sometimes they died by their own hand. One lady came into his consulting room with a revolver, and said, "Are you going to take out my colon, or am I to blow out my brains?" He took out her colon. The risk of this operation varied inversely with the intra-abdominal tension. With a flaccid abdomen in an aged female the risk in colectomy was non-existent. The only great risk arose from adhesions. He was certain that when surgeons realized the immense benefit the patient derived from the operation colectomy would be resorted to more frequently and with greater safety than at present. Dr. Hurst had given the meeting the idea that the operation was obsolete. He himself was doing more colectomies now than he had ever done in his life. Some speakers did not seem to understand what chronic intestinal stasis was. In conclusion, he complained that since he began to do this operation he had received nothing but abuse, not direct, but indirect. Patients came and told him that a doctor had said, "For goodness' sake, don't go to Lane. Whatever is wrong with you, even if it is only a sore throat, he will take out your colon." Another doctor had said, "Don't call Lane in; he will kill you for a certainty." He wished that those whose temperaments led them to take different views from his own would substitute argument for abuse.

Mr. J. P. LOCKHART-MUMMERY said that he had never been one of those who regarded the normal colon as a useless vestigial structure. A colon must have many functions which they did not seem to know much about. He had been struck with the fact that patients who had had a colectomy performed upon them were very subject to poisoning; certainly such people should be careful what drugs they took. There was no doubt that patients could survive a colectomy and become normal members of society, with certain inconveniences such as fluid stools. He had seen one case of intestinal stasis die without operation—a shocking case of auto-intoxication. He thought that colectomy should be done, but only in selected cases—namely, those in which the colon was completely degenerated. He agreed that when medicine came into its own colectomy would not be required.

Mr. E. G. SLESINGER produced statistics relating to 50 cases of colectomy in female patients performed in 1911–12 and their after-history. He had lost the records of the male cases, but his impression was that the results were about the same, save that the mortality was higher. The mortality figures, of course, depended upon the operability figures, and by choosing cases it was easy to show a low mortality. All these 50 cases, however, were those of chronic invalids, their invalidism having lasted for years before operation, and a considerable number were extreme surgical risks. Out of these 50 patients, 2 died from operation, and one other died some months after operation from acute intestinal obstruction. Of the remaining 47 he could only trace 25, but he had every reason to believe that in the 22 untraced cases the results were at least as favourable as in the others. Eighteen of these 25 patients were perfectly well; 3 were definitely better, though still suffering in certain respects; 2 were no better, and 2 had died during recent years, both of them from acute intestinal obstruction. He considered that the results amply vindicated colectomy.

Other speakers in the discussion, who had to compress their remarks owing to shortness of time, included Mr. TYRRELL GRAY, who argued that atrophic changes accounted for some of the symptoms which occurred after hemicolectomy, and described the manner in which venous stasis of the bowel occurred in visceroptosis where the normal supports of the intestine had failed, and the mesentery was called upon to support the large bowel, resulting in difficulty of venous return. If colectomy was done after this, it was important to remember that the original cause had not been tackled, and moreover that a piece of bowel had been removed. Dr. L. GROSS gave an account of some experiments in which rats had been fed on vitamin-deficient diet, the results suggesting that vitamin deficiency might be quite important in a number of colonic and ileal stasis cases.

Sir CHARLES GORDON-WATSON, from the chair, said that the Subsection might congratulate itself on the success of the discussion. It had not succeeded in reaching the solution of the entire problem, but it had gone a considerable distance towards it.

ANAESTHESIA IN INTRACRANIAL SURGERY.

AT a meeting, on March 3rd, of the Section of Anaesthetics of the Royal Society of Medicine, with Dr. H. J. SHIRLEY, C.M.G., President, in the chair, Dr. Z. MENNELL read a paper on anaesthesia in intracranial surgery. After referring to the effect of changes in intracranial pressure which come about quickly or suddenly Dr. Mennell briefly depicted the methods of anaesthesia in cranial surgery during the last twenty years at the National Hospital, Queen Square. The danger of chloroform, which was at the beginning of that time commonly employed, was explained by the much higher percentage necessary in the blood for anaesthesia when the intracranial pressure was raised. Directly the tension was relieved an enormous increase took place in the volume of blood flowing through the brain. A dangerous or even lethal dose might suddenly bathe the medullary centres. Anaesthesia deepened directly the dura was opened, whatever anaesthetic was being used. Ether was subsequently substituted for chloroform in the Vernon Harcourt inhaler, and later still it was given from a Junker bottle attached to an oxygen cylinder. Mechanical difficulties led to the substitution of infusion anaesthesia for these inhalation methods. The technique was tiresome and the method expensive. However, hedonal gave good results till the war rendered it unobtainable. Dr. Mennell drew attention to the deceptive rise of blood pressure due to the constant supply of fluid with infusion methods of anaesthesia. From these methods he passed to intratracheal ether, which he now considered the best method for all cerebellar, pituitary, or high spinal operations. The extreme flexion of the neck required for some of these operations can be permitted with no other method of anaesthesia. No sudden fall of blood pressure occurred if haemorrhage was properly controlled. The surgeon can operate without haste and the most formidable cerebral operations can be completed at one sitting. Vomiting, which led to protrusion of the brain and venous haemorrhage, can be more certainly avoided than by any other method. With temporal or parietal operations Dr. Mennell frequently gave ether and oxygen by means of a Junker inhaler. The intratracheal method was less necessary in these cases. Any attempt at swallowing was regarded as an indication to increase the strength of the ether vapour. A quickening of the pulse always preceded a fall in blood pressure. Removal of tumours from the cerebellum or lateral recess often caused serious trouble through direct disturbance of the medullary centres. A transitory severe fall in blood pressure commonly occurred. The method employed by Mr. Sargent of removing these tumours by a suction apparatus greatly lessened the danger. The radial pulse might be impalpable for as long as twenty minutes without serious harm resulting. The lighter the anaesthesia could be kept the better. Dr. Mennell next described the manner in which he used chloroform for an anaesthesia to permit the injection of alcohol into the fifth nerve, gave some statistics of his experience with intracranial operations, and demonstrated the apparatus which he employs.

Mr. PERCY SARGENT said that the variations in intracranial pressure were the most important factor during operations for cerebral tumour. The brain was singularly tolerant of changes of pressure provided that they were brought about gradually. The need of close co-operation between surgeon and anaesthetist was perhaps of greater moment in cerebral than in any other class of operation.

Mr. H. E. G. BOYLE stated that he had good results with endopharyngeal gas-oxygen-ether in cerebral cases. Dr. W. J. MCCARDIE, Mr. C. H. MOTT, and Mr. I. W. MAGILL also took part in the discussion.

EPIDEMIOLOGY OF SUMMER DIARRHOEA.

AT a meeting of the Section of Epidemiology and State Medicine of the Royal Society of Medicine held on March 23rd, with the President, Dr. A. K. CHALMERS, in the chair, Dr. MATTHEW YOUNG read a paper by Dr. JOHN BROWNLEE and himself on the epidemiology of summer diarrhoea.

The authors in the first place recapitulated the classical researches of Ballard which led to the enunciation of the view that the prevalence of summer diarrhoea was most closely correlated with the movement of the temperature at the depth of four feet, the ascent of the epidemic curve not beginning until the earth temperature registered 56° F. The important work of Peters led to the idea that it was an accumulation of temperature excess which was responsible, Ballard's measure being an index of such excess. The authors had analysed the weekly mortality returns of London from 1856 to 1921 and found a high correlation between accumulated temperature over 60° F. and the excess of weekly deaths above 100; but it appeared that in a series of years following 1911, when the maximum of the epidemic occurred later in the season, the correlation was slight. When rainfall was considered it was found that the partial correlation between rainfall and mortality from diarrhoea for constant temperature was zero. An analysis of the form of the epidemic curves led to the conclusion that a change of type had occurred. Up to the year 1899 the curves of the annual epidemic were fairly uniform in type, with a maximum as a rule about the thirtieth to the thirty-third week. In 1899 a sudden change occurred, and the maximum of the epidemic was shifted to a later week. In 1900, 1901, 1904, 1905, 1906, and 1911, although the form was similar to that of the years before 1899, the maximum was later. These curves suggested that the disease termed epidemic diarrhoea might be a mixture of two diseases—one predominant before 1899, the second mainly predominant since 1907. To test this point the annual figures were summed and decennial curves constructed. These latter were then analysed, and it was found that the compound curves could be satisfactorily resolved each into two component normal curves. The maxima of the component curves were at the thirty-first and thirty-sixth weeks in the four decades 1860–69, 1870–79, 1880–89, and 1890–99; in 1900–9 the maxima were at the thirty-third and thirty-seventh weeks, and in 1910–19 one component had a maximum at the thirty-seventh week. The importance of the second component increased with time, and by 1910–19 comprised almost the whole of the curve. A similar resolution was effected of the Manchester data from 1870 onwards. The same remark applied to Liverpool, and, making allowance for the roughness of the data, to the records of several foreign cities. The approximate method used was controlled in one series by the method of resolution devised by Professor Karl Pearson. The resolution having been effected, the explanation of the contradictory results of the tests of correlation emerged, because the correlation between accumulated excess of temperature and the deaths belonging to the early component proved to be large and positive, but the correlation of temperature and deaths belonging to the second component was small and negative. Passing to other etiological factors, a study of the relation between mortality and sources of water supplies suggested that the diarrhoea of infants was less closely associated with variations of the quality of the water than was the diarrhoea of adults. With respect to general sanitation, although it might be no more than a coincidence, yet the fact that the first change of type in London was observed in 1899—that is, a few years after the London by-laws devised by Sir Shirley Murphy began to be enforced—was suggestive. The replacement of horse by motor traffic was another change to be had in mind. Finally, the authors examined the relations observed in different cities between the prevalence of diarrhoea and flies, and remarked that the two prevalences were phenomena which, while they might be dependent to some extent for existence on similar conditions, probably largely meteorological, were best explained by the opinion that flies were in great measure responsible for the dissemination of the disease.

Dr. DUDFIELD, in opening the discussion, said he had never doubted that the rôle of flies was that of carriers, and agreed that the replacement of horse by motor traffic was a very important matter. He had also been struck by the occurrence late in the season of cases clinically indistinguishable from "summer" diarrhoea.

Dr. HAMER attributed very great importance to the effect of the London by-laws in preventing the accumulation of refuse. He also referred to the possible importance of the change in methods of locomotion, but had not found any excessive prevalence of infantile diarrhoea in the neighbourhood of great stables, although there was an excessive prevalence of flies. In his opinion the work of Peters was a first-rate contribution to epidemiology, and the death of the author a grave loss to science.

Sir WILLIAM MACPHERSON asked whether sufficient attention had been given to the effect of measures taken to protect food from flies. His experience had been that epidemic diarrhoea could be controlled by fly-proofing. Dr. BUTLER saw no reason to doubt that Ballard's rule was a thoroughly safe criterion. Zymotic diarrhoea was almost exclusively a disease of hand-fed children, and the instruction of mothers had to

be considered as a factor of reduction. Dr. GREENWOOD congratulated the authors on their success in analysing the curve, and thought their results did not conflict with those of Ballard and Peters, but threw light on the mechanisms at work. Dr. McKAIL thought that the authors' results admitted of a much simpler explanation than that put forward—namely, that modern methods of prophylaxis had delayed the rise of the annual curve. He also doubted whether sufficient attention had been given to decline of the birth rate; most of the curves shown were of absolute figures.

Dr. LANE-CLAYPON said that in Germany the temperature factor was regarded as of great importance. Although hand-fed children were first attacked, there was, in the extensive epidemic of 1911, a serious incidence upon breast-fed children. The German view was that in institutions all children must be regarded as potentially infective. Dust infection must not be forgotten.

Dr. McVAIL wished to know whether any relation between pasteurization of milk and diarrhoeal prevalence could be shown. Ballard had strongly held that diarrhoea was a specific disease, and he (Dr. McVail) suggested that cases occurred analogous with Sydenham's variola without exanthem (see *Obs. Med.*, iii, 2). Dr. BUTLER said there was no general pasteurization in London, but there had certainly been much improvement in the cleanliness of the milk. Dr. DUDFIELD mentioned the increased utilization of dried milks. Dr. GOODALL said, referring to Dr. McVail's remarks, that he had once had in his hospital an outbreak of diarrhoea, and there had been simultaneously cases with severe pyrexia, some ending fatally, but no diarrhoea. Pasteurization of the milk had been carried out, and since then he had never had an outbreak. He also knew that many of the large firms did pasteurize their milk.

The PRESIDENT thought that the paper would throw light upon the cumulative effect of temperature. Until recent years the English rates of mortality in infancy had been higher than the Scottish rates. Pasteurization had been very generally adopted by milk vendors in Glasgow for many years.

Dr. YOUNG, in replying, said that neither the date of its maximum nor the form of the curve was consistent with the simple explanation offered by Dr. McKail. With regard to the source of infection, it had to be remembered that what was most important was what happened to the milk after it had reached the home of the consumer.

ALBUMINURIA IN PREGNANCY.

AT the meeting of the Harveian Society of London on March 23rd, Sir WILLIAM WILLCOX presiding, a discussion took place on albuminuria in pregnancy.

Mr. ALECK W. BOURNE said that the chief line of attack in pregnancy toxaemias was that of chemical examination. It was to the chemical pathologist they must appeal for further knowledge of the disturbance of function. Clinically they were still confused by unco-ordinated lesions and symptoms, and not yet sure which were primary and which secondary. Albuminuria in pregnancy was the name for a group of symptoms of which the most characteristic was the presence of albumin in the urine, and no other sign was constant, though the most frequent was raised blood pressure. By observation of the predominant symptoms it was possible to group patients. The first and commonest clinical type was the renal, in which the condition resembled a subacute nephritis. The second commonest was the cerebral type, a condition in which a series of fits occurred in labour, with few or no warning symptoms except the albumin in the urine (one case of which he had notes had 53 fits after labour, without any premonitory symptoms). The third was the gastric type, characterized by uncontrolled vomiting, and was occasionally met with in early pregnancy, though his experience of it was chiefly in the later months; there was evidence that this gastric type was really of hepatic origin. The fourth type was the hepatic condition, fortunately rare, though a certain amount of hepatic inefficiency probably existed in all cases of toxic albuminuria in pregnancy. The fifth type was the uterine type, associated with necrosis of the uterine wall, and consequently serious haemorrhage. In addition to the albuminuria, frequently there were other toxic symptoms. The incidence of albuminuria in pregnancy was much greater than was commonly supposed. Of some 14,000 cases of pregnancy and labour which he had looked through, 30 per cent. had some degree of albumin. Mere albuminuria without high blood pressure, vomiting, or other symptoms was not very important. The occurrence of fits was the most serious sign. The pregnancy was seriously prejudiced from the time of the first fit, and the high rate of incidence of fits in albuminuria—some 46 per cent.—rendered its recognition and active treatment a matter of considerable importance. There were three possible disasters, the most frequent being the danger of onset of convulsions; the second, the complete suppression of urine, due to necrosis of the cortex of the kidney; and the third, jaundice, which was very rare (he had seen only three cases in about fifteen years at Queen Charlotte's Hospital). The number of fits had no relation to the mortality. Some women had a great number and got better, others might have one fit and die. Under some circumstances vomiting might be the most dangerous condition in late pregnancy. Two serious signs of impending trouble in toxic albuminuria were (1) the development of a fresh symptom grafted upon those previously existing while the case was undergoing medical treatment, and (2) a sudden increase in intensity in the symptoms already present.

Dr. EARDLEY HOLLAND said that his colleagues at the London Hospital and the City of London Maternity Hospital were making an investigation of the after-results of all cases of eclampsia and toxic albuminuria of pregnancy which had occurred in the obstetrical wards during the last ten years. The cases of eclampsia alone numbered nearly 250. It was proposed to ascertain, whatever might be the immediate recovery of the patient, the occurrence of remote effects of the disease and the percentage of patients who got permanent damage. They could all recall cases which had suffered chronic renal disease as a consequence of eclampsia. These investigations had not proceeded far, but so far as they had gone it appeared that a fairly high percentage of cases of eclampsia and severe toxaemias of pregnancy showed signs of chronic renal disease or renal inefficiency. Of course, it had to be remembered that patients who had continued ill after their attack of eclampsia were more likely to have remained in touch with the hospital than others who had quite recovered. The question of permanent kidney damage following eclampsia had an important bearing upon treatment, for the longer such a pregnancy was allowed to go on the more likely was this permanent damage to occur. It was often regarded as a triumph if the eclampsia cleared up and the pregnancy went on, but he doubted very much whether it was a triumph. He had seen eight cases in which the fits had cleared up and the pregnancy had gone on, and in only two of them was the result absolutely satisfactory from the point of view both of the health of the mother and the delivery of a living child. He urged that labour should be induced in such cases.

Dr. MACKENZIE WALLIS dealt with the subject of laboratory tests. In normal pregnancy, particularly after the fourth month, the blood-urea content was nearly always below that of the normal non-pregnant woman, and the same applied to the blood-sugar. The diastase content of the urine, on the other hand, was higher in pregnancy. When they came to estimate the blood changes in the toxaemias of pregnancy they found very little variation from those in normal pregnancy. The most striking point in the toxaemias of pregnancy, so far as the blood was concerned, was the marked increase in the cholesterol content; this was increased enormously, and the highest figures ever recorded for cholesterol content had been found in cases of eclampsia. In the urine much more striking changes were noticed than in the blood, particularly with regard to the diastase content, which was a very valuable method of differential diagnosis. High diastase content of the urine preceded albuminuria. He regarded the estimation of urea in the blood and diastase in the urine as the tests of choice in distinguishing between toxaemia in pregnancy and true nephritis in pregnancy. In nephritis of pregnancy the diastase was invariably low, and the lower it was the more unfavourable the pregnancy.

Dr. S. SIMMS followed on similar lines to the last speaker, recounting some work on laboratory tests which he had carried out under the direction of Sir William Willcox at St. Mary's Hospital. He considered that the estimation of the urea was very valuable indeed. Dr. C. M. WILSON thought that very often the induction of labour was left too late. The tendency was to sacrifice the interests of the mother to those of the child, and in doing this very frequently great damage was done to the mother. Dr. R. S. O. DUDFIELD said that he would like to know how Mr. Bourne proposed to describe on the death certificate the various distinct conditions to which he had alluded. It was only since 1911 that

albuminuria in pregnancy was set out in the Registrar-General's returns as among the accidents and diseases of pregnancy. Dr. R. G. MURRAY thought that there was some evidence that this condition was less frequent among better-class patients than among patients belonging to a lower economic level.

Sir WILLIAM WILLCOX referred in particular to the interest of Dr. Mackenzie Wallis's contribution, showing how in the laboratory these toxaemias of pregnancy could be differentiated. He had drawn attention to the likelihood that the toxins of the corpus luteum were, if not entirely responsible, to a great extent responsible for this extraordinary toxaemia. In the literature of the subject the corpus luteum had been entirely forgotten, and it was very interesting if this insignificant body—as it appeared to them in their anatomical dissections—was capable of results of such great importance. He thought that toxaemias of pregnancy where albuminuria occurred were nearly similar to the conditions one saw in the forms of toxic jaundice. The toxins produced in pregnancy—no doubt normally in the healthy person neutralized and rendered harmless—caused a certain amount of damage to the kidney. It was not damage of the nature of nephritis, but damage of degeneration. The cells of the kidney were damaged, some recovered and some did not, and during pregnancy the patient perhaps developed severe symptoms which left a portion of the kidney cells necrosed. Each successive pregnancy with such a person was likely to be attended with more serious results than normal. Yet in this toxic albuminuria of pregnancy a patient might recover and apparently enjoy normal health.

Mr. BOURNE, in replying on the discussion, said that more than one speaker had alluded to the danger of allowing these albuminuric patients to go on too long without inducing labour. But before one could do anything intelligently an accurate diagnosis must be made, and in many cases this was only possible by chemical examination.

CARDIFF MEDICAL SOCIETY.

A CLINICAL meeting of the Cardiff Medical Society was held on March 14th, under the chairmanship of the President, Dr. F. BUCKHAM, when Mr. C. DE W. GIBB showed a specimen of cerebral abscess secondary to bronchiectasis. The abscess, which was situated in the right temporo-sphenoidal lobe, was almost the size of a walnut and possessed a wall of granulation tissue at least one-eighth of an inch thick; the right lung showed in the lower lobe several rather large bronchiectatic cavities filled with foetid pus. The patient had been admitted to hospital following an accident, but his symptoms and signs pointed to a cerebral condition, not necessarily connected with the accident; it appeared, in fact, from the thickness of the abscess wall in the brain that the abscess might have been present for at least six weeks and that the relationship of abscess to accident was of the nature of cause and effect. From the pus in the abscess the pneumo-bacillus of Friedländer was isolated in pure culture.

Mr. GEARY GRANT showed a left kidney with wedge-shaped caseating masses in the upper half, removed from a man aged 39 who for eight months had suffered severely from polyuria, dysuria, and extreme diurnal and nocturnal frequency. The cystoscope showed a left ureter resembling a golf hole, with swelling and injection of margins and several small tubercles on the outer and upper side. On one occasion jets of pus were seen to come from this ureter, but subsequently the secretion ceased completely from this kidney. Within three or four weeks of nephrectomy the symptoms of cystitis cleared up.

Professor E. EMRYS-ROBERTS and Dr. H. A. HAIG showed specimens from a case of primary pulmonary tuberculosis followed by tuberculous meningitis. Both lungs showed extensive apical involvement by numerous tubercles, some of these already breaking down and forming small cavities; the apices of the left upper and lower lobes were all affected, the right mid-lobe being the only one to escape. The bronchial glands showed no signs of involvement. The brain showed a thick yellowish exudate over the ventral and dorsal aspects of the pons and peduncles, and a few tubercles were found on some of the smaller vessels in the sulci between the convolutions round the Sylvian fissure. The cerebro-spinal fluid removed *post mortem* from the brain showed rather numerous tubercle bacilli, a relative polymorphonuclear increase, and a marked relative lymphocyte increase. A few submiliary tubercles were found in sections of the liver.

Professor E. J. MACLEAN showed a case of a large semi-pedunculated fibroma removed from the right labium majus of a patient six months pregnant. Microscopically it was seen to be almost a pure fibroma, only a very few involuntary muscle fibres being present here and there. Removal had been undertaken in order to obviate the condition causing obstruction at labour.

Professor A. W. SHEEN showed radiographs of three "chip" fractures of the phalanges, two in the fingers and one in the toe, and described the cases. He pointed out that such fractures were usually not detected without the use of *x* rays, when they could probably be found in many cases of severe sprain or dislocation. The treatment was discussed, immobilization in plaster-of-Paris for the majority of cases of finger injury being recommended if the patient would consent.

Mr. S. ALWYN SMITH showed end-results of bone grafting. (*a*) Gunshot wounds of both forearms, resulting in a 3-inch gap in each radius, at the junction of the upper three-quarters with the lower quarter. A tibial autogenous graft was used for each arm. The inlay method was used at each end in one arm, and in the other the proximal end was inlaid while the distal end was pegged into the cancellous bone of the expanded lower end of the radius; fixation was by soft iron wire. Radiographs taken two years and two and a half years after operation showed thickening of the graft and formation of new cortex. (*b*) Ununited fractured lower end of tibia, of eighteen months' duration. Operation for freshening ends and fixation by wire loops failed; but bone grafting by means of a "slide inlay" resulted in firm bony union. (*c*) He also showed the end-results of tendon transplantation for irremediable musculo-spiral and posterior interosseous nerve lesions in four cases.

Dr. G. I. STRACHAN showed: (*a*) A case of anencephaly, in which the placenta was adherent to the base of the skull by a thick amniotic adhesion, associated with stunting of the right hand; the effect of amniotic adhesions as a possible cause of this malformation was discussed. (*b*) A section of the uterus with placenta *in situ* removed *post mortem* from a patient who died, undelivered, of eclampsia. The placenta was extensively occupied by haemorrhages, and bleeding had occurred also between the placenta and uterine wall and had infiltrated, to some extent, the uterine muscle. Clinically, profuse *ante-partum* haemorrhage was noted. The effects of *ante-partum* accidental haemorrhage were referred to, and the relationship between this and placental infarction and albuminuria and toxaemia was discussed.

Other cases and specimens were shown by Mr. H. G. COOK, Dr. J. C. GILCHRIST, Mr. CORNELIUS GRIFFITHS, and Mr. J. W. TUDOR THOMAS.

ARTERIO-VENOUS ANEURYSMS.

A MEETING of the Section of Surgery of the Royal Academy of Medicine in Ireland was held on March 10th. Sir W. I. DE C. WHEELER was in the chair, and showed a case of arterio-venous aneurysm of the subclavian vessels. The man was one of two similar cases under his care in Mercer's Hospital. Both men were wounded in 1918 by a bullet traversing the region of the subclavian artery above the inner third of the clavicle. A diffused thrill could be felt, and there was a loud murmur like the booming of artillery in the distance, widely distributed, but with a point of maximum intensity just above the clavicle. In one man the radial pulse was much smaller than on the opposite side; he also had concomitant injury of the brachial plexus, and was distressed by the intense noise of the murmur when he lay upon the affected side. Sir William Wheeler stated that he recently had three other cases of arterio-venous aneurysm in the limbs. In the first, an officer, there was a communication between the vein and artery in Hunter's canal. The vessels were tied above and below (quadruple ligature). The case was cured and there was no apparent disturbance of circulation. The operation was performed one month after the injury. A child of 8 years presented a similar condition above the middle of the thigh, but in this case there was a large pulsating tumour, and at operation, although both artery and vein had been obviously injured, no communication between the two could be found. Four ligatures were applied as in the previous case, with resultant cure, and no circulatory disturbance. This patient also was operated on one month after injury. A third case showed all the characteristic signs of arterio-venous aneurysm of the posterior tibial vessels. The operation consisted of excision after ligature of the vessels above and below; the result was good. Although a spontaneous cure was rare,

there being only two in a series of 447 cases tabulated by Callender, Sir William Wheeler pointed out that the condition was not incompatible with long life. He did not propose to operate on the two cases of aneurysm at the root of the neck at present under review, unless special indications arose. So far as he could gather from recorded literature, results of operation on arterio-venous aneurysms of the subclavian vessels were very discouraging, and the procedure was attended with great difficulty. The proximal dilatation of the artery, the enlargement of the heart, and the general slowing of the pulse in a number of cases were points of interest. In the neck the veins often did not dilate, as the column of blood pushed aside by the arterial inflow found a ready escape through channels equally large with a negative pressure.

Intrathecal Tumour of the Cervical Spinal Cord.

Mr. W. PEARSON described a case upon which he had operated for this condition. The patient was an unmarried woman of 50, who gave a history of pain in the right side of the neck over a period of four years, punctuated by free intervals. The first free interval lasted for two years. She had been treated in hospital on several occasions for the pain, and there were never any other nerve symptoms save occasional attacks of wry-neck. In February, 1921, examination showed that the pain was strictly confined to the area of distribution of the anterior primary divisions of the second, third, and fourth cervical spinal nerves on the right side, and in the absence of other signs the case was regarded as one of cervico occipital neuralgia. As the posterior primary divisions of the nerves were not involved it seemed probable that a peripheral cause might exist, and consequently a block dissection of the posterior triangle of the neck with high division of the affected nerves was performed. The pain ceased for two months and then recurred. She returned to hospital again in July, and again no other nerve symptoms were present. In August a laminectomy was performed with the intention of dividing the nerve roots. On opening the dura a dark red tumour was seen closely applied to the right side of the cord, displacing the latter to the left. It lay in front of the posterior nerve roots and extended up through the foramen magnum and downwards into the spinal canal. The laminae of the upper six cervical vertebrae were removed without reaching the lower end of the tumour, but the latter was then capable of enucleation after the third and fourth posterior roots were divided. It subsequently measured 6.5 by 2.5 by 1.5 cm., and the pathological report was that the tumour was a spindle-celled sarcoma. The patient's progress was satisfactory at first, but later on signs of compression, varying much from time to time, made their appearance, and the patient eventually died, more than six weeks after operation. No cause of death could be determined at autopsy, the brain, spinal cord, and meninges appearing normal. The experience in this case suggested: (1) In cases of severe persistent pain of segmental type with negative neurological findings, lumbar puncture may aid diagnosis. In this instance it would most probably have shown that obstruction existed in the subarachnoid space. (2) In such cases exploratory laminectomy should be selected in preference to peripheral neurectomy in the first instance. Particularly remarkable and inexplicable was the fact that no pain was referred to the cutaneous branches from the posterior primary divisions of the affected nerves.

Mr. J. T. MCCULLAGH and Mr. M. DOCKRELL showed a number of patients fitted with modern artificial limbs and surgical appliances. The demonstration was illustrated by Mr. MCKIE, instructor to the limbless at the Special Surgical Hospital, Blackrock, and by his pupils.

AT a meeting of the North of England Ophthalmological Society held on March 10th the following were elected to the committee:—President: Mr. G. H. Pooley, Sheffield. Vice-President: Mr. Thomson Henderson, Nottingham. Treasurer: Mr. Harry Lee, Leeds. Secretary: Mr. Percival J. Hay, Sheffield. Members of Council: Messrs. J. Gray Clegg, Manchester, and A. L. Whitehead, Leeds.

A PATHOLOGICAL meeting of the West London Medico-Chirurgical Society was held at the West London Hospital on March 3rd, with the President, Sir G. LENTHAL CHEATLE, in the chair. A series of interesting pathological specimens were shown by the PRESIDENT, and by Mr. MCADAM ECCLES, Dr. HAROLD SANGUINETTI, Mr. DENHAM PINNOCK, Dr. L. R. SHORE, and others. A discussion followed.

Reviews.

TECHNIQUE OF THE TEAT AND CAPILLARY GLASS TUBE.

SIR ALMROTH WRIGHT and Dr. COLEBROOK could not have chosen for their book, *The Technique of the Teat and Capillary Glass Tube*,[1] a more appropriate motto than the famous words of Carl Ludwig, "Die Methode ist Alles," for this volume is devoted to an exact description of laboratory methods in which glass pipettes can be employed, with only so much of theoretical consideration as will enforce the argument of the importance of technique.

This, however, appears not to have been the only purpose which the authors had in view in compiling this handbook for the medical research laboratory, for in the preface they seem inspired with missionary enthusiasm to the "general body of the medical profession," whom they wish to convert to the view that "clinical experience . . . unaided by apparatus and technique is for the purpose of research of infinitely little account." By this they mean that in judging, for example, of the efficacy of a remedy by experience alone there are so many fallacies in the selection of the material, in the administration of the remedy, and in the interpretation of results, that such investigations rarely lead to trustworthy generalizations. Mere statistical inquiry also receives from the authors an equally emphatic rebuke, on the ground that it is notably inaccurate. It is maintained, on the other hand, that the researches which can be carried out in a laboratory on the blood and body fluids will often supply precise information as to the absorption of a certain drug, and may indicate exactly what has been achieved by treatment.

The present volume—the second edition of the much smaller book which appeared in 1912—contains important additions and developments. Chief amongst these is a device for lining pipettes and slides with paraffin, which makes it possible to measure small quantities of fluid with almost mathematical exactness, and prevents the contained fluids from absorbing traces of alkali from the glass. Another modification of pipette technique has been introduced under the somewhat misleading title of "Method of washes and mural implantations," which depends upon the fact that when fluid is drawn up into a pipette of a diameter of half a millimetre and subsequently expelled, about one twenty-fifth of its volume remains behind in the pipette, and it is thus possible to make rapidly a one in twenty-five dilution of a fluid. In a similar way it is possible to leave bacteria attached to the walls of a pipette into which divided volumes of serum are subsequently drawn, and each volume of serum in turn will be inoculated with diminishing numbers of bacteria. Such a procedure is obviously of only rough utility, and though the technique may be of value in determining the bactericidal power of serum (for which purpose it was apparently devised), it is doubtful whether it will be of much value in other directions, and it is, perhaps, hardly worthy of being classed amongst the "refinements and developments of the technique." A simple device is described for fitting a teat on to a pipette which is charged with fluid without disturbing the contents, a procedure which has always presented difficulties. More simplified methods have been introduced for the measurement of the coagulation time of the blood, the antitryptic titre of the serum, and the bactericidal power of the blood, and there are three new chapters embodying research work carried out on infected wounds and dealing with the migrations and functions of the leucocytes, the source and origin of protective substances, and the therapeutics of infected wounds. A broad and practical outlook is given to the technique of the examination of the coagulability, alkalinity, and antitryptic titre of the blood by the addition of appendices to the chapter dealing with the clinical significance of the problems involved.

Such are the developments to be found in the latest edition. For the sake of laboratory workers unfamiliar with the first edition—if such there be—it is only necessary to point out that Sir Almroth Wright's book has always been the primer of pipette workers and the standard work of reference for information regarding the making of simple glass apparatus for use in the laboratory. It contains many ingenious devices for measuring small quantities of fluid, and without attention

[1] *Technique of the Teat and Capillary Glass Tube.* By Sir Almroth Wright and Dr. Leonard Colebrook. London: Constable and Co. 1921. (384 pages; 151 illustrations. 42s.)

to the detail so meticulously described in these pages it is impossible to obtain satisfactory blood films for opsonic work. Full information is given on the question of the opsonic power of the blood and the preparation of vaccines, together with many other original contributions to laboratory studies.

One great merit of all the technique herein described is that it is simple and can be carried out in the "side room" of a hospital ward without the assistance of complicated and expensive apparatus. The book will be of interest, therefore, to all medical men who wish to investigate the scientific problems connected with disease. But to those not trained in laboratory work it is only right to say that though the book contains the truth, and, we hope, nothing but the truth, it does not pretend to enshrine the whole truth. In particular the chapter which is devoted to the Wassermann reaction describes only one method of carrying out this test, and this, though a rapid and ingenious modification, is not looked upon with favour by the majority of bacteriologists, by whom it is regarded as less reliable than the orthodox methods. The same warning is applicable to the agglutination section, for though the methods described for this reaction are useful they are by no means all-sufficient.

The correct view to take with regard to this volume is that therein are recorded the researches of Sir Almroth Wright and his colleagues, and the manifold contributions they have made to scientific methods. No further commendation need be given than this.

GASTRIC SURGERY.

IN writing their monograph on the *Surgical Treatment of Non-Malignant Affections of the Stomach*[2] Drs. CHARLES GREENE CUMSTON and GEORGES PATRY study the indications for operation, the results obtained, and the conditions determining the choice of an operative procedure. Their conclusions are based, apparently, on a digest of some part of the literature of the past twenty years, little reference being made to their personal experience.

The book commences with a long historical account of the various operations which have been performed for the relief of gastric affections, special attention being devoted to the operation of gastro-enterostomy, to which upwards of thirty pages are given. Most of this is of no more than historical interest, and its value in this respect is much diminished by the absence of a bibliography. Undue prominence is given to the history of the efforts to overcome vomiting, due to a vicious circle, and very little space is devoted to post-operative peptic ulcers—a much more important question at this period of gastric surgery. A good point is made in the reference to adhesions of the efferent loop as a cause of mild degrees of reflux vomiting.

The use of Murphy's button in certain cases of gastro-enterostomy, and a belief, apparently, in the spontaneous closure of gastro-enterostomy openings, without antecedent ulceration, sound strange in British ears. The belief, together with the opinion that the stoma does not function when the pylorus is patent, leads the authors to advocate strongly the combination of pyloric exclusion with gastro-enterostomy. These conclusions appear to us to be based on false premises, as it has been shown by Hartmann and others that the stomach does function, although the pylorus be patent, and that, so far from closure of the stoma being specially associated with a patent pylorus, in the great majority of reported cases the pylorus was not permeable. The point is of importance, since many surgeons believe that the combination of exclusion with gastro-enterostomy predisposes to the formation of secondary ulceration.

The conditions requiring surgical treatment are next considered under different headings, by far the chief place being occupied by various types of stenosis and ulcer. The conclusions arrived at are very contentious, and the evidence on which they are based is extremely unconvincing. The authors have a marked preference for indirect methods of treatment, especially for gastro-enterostomy combined with pyloric exclusion. The modern radical methods find little favour, and an exaggerated view is taken of the risk attaching to gastric resection in the case of gastric ulcers. Statistics of the cases reported down to 1911, with a percentage of mortality of 20 per cent., are given as showing the risk of these operations. But these figures are valueless at the present day, when the mortality of partial gastrectomy for ulcer in the hands of skilled surgeons is very little higher than that of gastro-enterostomy. So obsessed are the authors with the value of the operation of gastro-enterostomy that they regard it as the one most commonly applicable to cases of severe haematemesis when operative treatment is decided on. Ptosis, nervous dyspepsia, disturbances of secretion, tubercle, syphilis, and traumatic affections are all discussed shortly, but the main bulk of the work is concerned with ulceration and its complications.

[2] *Surgical Treatment of Non-Malignant Affections of the Stomach.* By C. G. Cumston, M.D., and Georges Patry, M.D. With an Introduction by Sir B. G. A. Moynihan, K.C.M.G., C.B., M.S. London: W. Heinemann (Medical Books), Ltd. 1921. (Demy 8vo, pp. x + 349. 15s. net.)

PSYCHOLOGY AND THE TEACHER.

DR. CRICHTON MILLER has written *The New Psychology and the Teacher*[3] for those who are in any way interested in the education of the young. He does not profess rigid adherence to any one school, though his views approximate to those developed by Jung, but he is convinced that modern trends in psychology include much of value to the educationist. Analytical psychology, it is suggested, not only throws direct light on the development of the child, but it frees the teacher's own mental and emotional life from bias and repression, and thus gives him that self-knowledge which endows him with a clearer sight and a greater freedom of action in helping the child. The author is opposed to the idea that the teacher should utilize his knowledge by endeavouring to analyse the children he teaches, and he points out that the analysis of the child and adolescent is a procedure of great delicacy. It is perhaps as well that this should be specifically stated, as some writers have advocated the use of the psycho-analytic method by teachers, in spite of the fact that every nervous child necessarily involves definitely medical problems.

In successive chapters the author develops his subject under the following headings: authority and suggestibility; reality and phantasy; the emotional development of the boy and girl; the unconscious motive; mental mechanisms; dream symbolism; the herd instinct and the herd ideal; and educational methods. Each section is preceded by a useful synopsis of its contents, and the various subjects considered are explained clearly and in a manner quite comprehensible to the non-medical readers for whom the book is intended. In some directions Dr. Miller is rather vague in his psychology, as for instance when he refers to the necessity for "the adjustment to the Infinite" in describing the emotional development of a boy. It is also surely rather an extreme statement to make that "it is useless for a person to consider himself an adult while he is still pretending to himself and to the world that he does not know whether there is a God, and is indifferent on the subject." There must be quite a number of thoroughly normal people who have no decided views on subjects of this kind. A question we should like to have seen more fully treated is the age at which a boy should leave home and go to a boarding school, because it is one which gives many parents a good deal of anxiety. Dr. Miller suggests 12 as the most suitable age, but there is of course an increasing tendency to make it much earlier. A famous headmaster is reported to have said: "The more I see of the average parent the more I admire the average boy." If this be a correct estimate of the modern parent perhaps the earlier a boy is sent away from home the better it will be for the development of his character!

COLLECTED PAPERS OF THE MAYO CLINIC.

As the twelfth volume of the *Collected Papers of the Mayo Clinic*[4] contains 124 articles arranged under ten heads, it is obviously impossible in the available space even to mention their titles. As will be generally expected, the majority of the papers are surgical; but in the section on the ductless glands, which contains eleven articles, the first is on the fundamental classification of disease by the basal metabolic rate; thus, just as the temperature chart divides diseases into two groups, the febrile and the afebrile, so the basal metabolic rate calls into being three categories—namely, diseases with a normal basal metabolism (a normal heat production), those with a decreased and those with an increased rate. For practical purposes an increased basal

[3] *The New Psychology and the Teacher.* By H. Crichton Miller, M.A., M.D.Edin. and Pavia. London: Jarrolds, Ltd. 1921. (Cr. 8vo, pp. 231. Price 6s. net.)

[4] *Collected Papers of the Mayo Clinic, Rochester, Minnesota.* Vol. xii, 1920, published September, 1921. Edited by Mrs. M. H. Mellish. Philadelphia and London: W. B. Saunders Co. (Roy. 8vo, pp. xi + 1392; 446 figures. £0s. net.)

metabolic rate indicates hyperthyroidism, whether due to Graves's disease or to thyroid adenoma, provided active acromegaly is ruled out and the group of febrile diseases eliminated by a normal temperature. Mr. W. M. Boothby follows up this paper with one on thyrotoxic adenoma, in which, as shown by H. S. Plummer in 1913, the hyperthyroidism is quite distinct from that of exophthalmic goitre. The relation of hyperthyroidism to diabetes mellitus is discussed by Professor Reginald Fitz, and the activity of the surgeons is shown by Dr. de Pemberton's analyses of over four thousand thyroidectomies in three and a half years, of which five hundred and forty-two were substernal and twenty-five intrathoracic goitres. Professor E. C. Rosenow's papers on influenza and influenzal pneumonia are well illustrated, and Dr. Stokes has several interesting articles in connexion with various aspects of the salvarsan treatment of syphilis.

Dr. W. J. Mayo contributes no fewer than eight papers dealing with such various subjects as the calloused ulcer on the posterior wall of the stomach, the conservation of the menstrual function, haemolytic jaundice, and the relation of anatomy to present-day surgery; in the course of the last article he has occasion to quote a surgeon of the past to the effect—"Damm the anatomy, stick close to the bone," and therein is contrasted the vigorous language of a bygone day with a most gratifying unfamiliarity with such words and their spelling on the part of one of the famous chiefs of the Mayo foundation. Professor Charles Mayo with five articles, and Professor L. B. Wilson with six papers, set a good example of continued hard work. The volume is generously and successfully illustrated, and cannot but excite sincere admiration and a most cordial welcome.

MEDICAL HISTORY.

THE final number of volume iii of the *Annals of Medical History*[5] has on its cover the portrait of Dr. John Bard, who was educated in Philadelphia under Dr. John Kearsley, senior, and was a successful physician in New York, where his son Samuel founded the first medical school of that city. Reference is made to John Bard in Dr. W. S. Middleton's well-illustrated account of the two John Kearsleys, uncle and nephew, of Philadelphia. In his final instalment of "Montaigne and Medicine" Captain J. S. Taylor, of the United States navy, traces the essayist's travels in search of relief from renal lithiasis, and gives numerous extracts from his essays, including some on death and old age. Dr. Jacob Rosenbloom records the forty years' friendship and many journeys together in Europe, Asia, and Africa of Dr. Thomas Hodgkin and Sir Moses Montefiore (1784–1885), and mentions that, in addition to describing the disease to which Sir Samuel Wilks unselfishly attached his name, Hodgkin anticipated Sir D. Corrigan by three years in his account of aortic regurgitation. Dr. John Ruhräh's analysis of the literary activities of Dr. John Ferriar of Manchester is mentioned on page 531 of this issue. Mr. C. Sayle, of the University Library, contributes a description of the library of Thomas Lorkyn, Regius Professor of Physic in the University of Cambridge (1564–91), which includes among its 252 volumes eleven incunabula, and is, indeed, his monument, for, unlike his contemporary John Caius, he wrote very little, and travelled not at all. By a happy thought Mr. R. T. Gunther has published for comparison the list of the library ("the rewe of bookes") of Nicholas Gibbard, M.D., sometime demy of Magdalen College, Oxford, and a contemporary of Lorkyn.

Dr. W. J. Turrell, who lives close to Magdalen College, writes attractively on three electrotherapeutists of the eighteenth century—John Wesley, J. P. Marat the revolutionist, and James Graham the fanatical quack, than whom it would be difficult to find more divergent characters and temperaments. Dr. William Abbatt's sketch of Dr. Erasmus Darwin (1731–1802) contains a reference to the literary coterie in Lichfield, and to the absence of mutual admiration between Darwin and Dr. Samuel Johnson, with the comment, "probably a case of two lions each thinking the other superfluous on the (Lichfield) shore." Dr. O. C. Gruner writes on "The interpretation of Avicenna," Dr. Jonathan Wright on "The forerunners of Empedocles and the nature philosophers," and Dr. C. Greene Cumston on the history of the treatment of the surgical affections of the lacrymal apparatus. In a short note on "Emerods, mice and the plague of 1 Samuel, chapter iv," Professor D. Fraser Harris identifies emerods, with the bubonic swellings, and comments on the association of bubonic tumours and rodents at a date so remote from the discovery that rodents are a necessary link in the production of human bubonic plague. The psychological mechanisms and determinants of medical satire are discussed by Dr. Isador H. Coriat of Boston, who remarks that Molière's satire of doctors and medicine was a sort of compensation for his own incurable malady, and was probably connected with the deaths of his son and an intimate friend from the administration of antimony. The editor writes on *Le Caducée*, a play with a miserable charlatan as its central figure, which was produced for the first time in Paris a year ago, and is from the pen of André Pascal (the *nom de plume* of Baron Henri de Rothschild), a member of the medical profession; the play should be seen or read by every medical man, for though the quack has often been portrayed on the stage the realism has never been so vivid and grim. Dr. Cowdry writes attractively on Taoist ideas of human anatomy, derived from a visit to the library of the White Cloud Temple near Peking.

[5] *Annals of Medical History*. New York, vol. iii, No. 4, December, 1921. (Serial No. 12). Edited by Francis R. Packard, M.D. New York: Published quarterly by Paul B. Hoeber. (Med. 4to, pp. 301–416. Yearly subscription 8 dols., single numbers 2.50 dols.)

FORENSIC OTOLOGY.

THE medico-legal aspects of otology are often of considerable importance in the civil and criminal courts, in workmen's compensation cases, and nowadays in the assessment of pensions and awards for injuries received in the war. The attitude of the War Office towards this speciality is, perhaps, the reason why an authoritative work on the subject has not been produced by a British otologist. Books written in foreign countries, where the legal practice is essentially different, are naturally of less value here from this point of view, but the book on forensic otology which Dr. R. Imhofer[6] of Prague has written in German will nevertheless repay a careful perusal, for, apart from the strictly medico-legal aspect, he provides a very thorough and careful description of practically every form of injury which can possibly affect the ear. Special attention is paid to war injuries, for most of his experience was obtained while in charge of the aural department of the military hospital at Cracow from 1915 to 1918. The book is intended for the aural specialist, and is too technical to be of use to a lawyer; therefore the first forty pages on anatomy and physiology might well have been omitted. The second chapter is devoted to the examination of the ear from the forensic point of view, and the section on the detection of malingering is particularly interesting; the author does not mention the method of detecting simulated unilateral deafness by speaking through a binaural stethoscope, or similar arrangement of two tubes, one of which is blocked. The third chapter comprises the main part of the book; it deals in great detail with injuries of the ear; they are arranged, not in the anatomical order of the part injured, but according to the cause—cuts, blows, firearms, sudden variations in air pressure, and so forth. This chapter contains reports of many interesting cases from the author's own experience and from that of others; and there is an interesting section on self-mutilation with intent to avoid military service, which would appear to be somewhat frequent.

The fourth chapter is on malapraxis, among instances of which the author gives prominence to unskilful attempts to remove foreign bodies and the syringeing of a traumatic rupture of the drum. The final chapter discusses the relationships of aural disease and psychical disturbances, and the book closes with a full bibliography and a good index. It is a monument of careful work and full of interest to the otologist.

[6] *Gerichtliche Ohrenheilkunde*. Von Dozent Dr. R. Imhofer. Leipzig: Curt Kabitzsch. 1920. (Roy. 8vo, pp. 248; 2 plates and 60 figures. M. 35.)

ENDOCRINOLOGY.

THE enlarged third edition of Dr. COBB's book on *The Organs of Internal Secretion*[7] provides general practitioners of medicine with a full and up-to-date account of the diseases of these glands, and with a manual of the use of glandular extracts in the treatment of disease and ill health. Dr. Cobb is a firm believer in the general utility of treatment with extracts of the thyroid, pituitary, adrenal, and other glands,

[7] *The Organs of Internal Secretion: Their Diseases and Therapeutic Application*. By I. Geikie Cobb, M.D., M.R.C.S. Third edition. London: Baillière, Tindall, and Cox. 1921. (Cr. 8vo, pp. 368. 10s. 6d. net.)

and looks to see an increase in their employment in general medicine. His pages are full of information, and contain many quotations from other authors who have written so largely about the endocrine glands. It would be a convenience if authors could come to some agreement about the exact form of the adjective "endocrine," which has as common variants in English medical literature the words "endocrinous" and "endocrinic." Dr. Cobb solves the problem by using all three.

NOTES ON BOOKS.

To the constant stream of books of instruction for the expectant mother Dr. R. DOUGLAS HOWAT has contributed yet another, which he entitles *The Threshold of Motherhood*.[8] It is a pleasantly and simply written little book of fifty pages, beautifully printed on good paper, and unobtrusively but neatly bound. The subject-matter is, of course, the same as in other books of a similar nature—the symptoms and hygiene of pregnancy, the preparations for labour, an outline of the clinical course of labour, and the preparations for the reception of the baby and its management during the first weeks of life. As compared with the transatlantic books of this kind, Dr. Howat's volume does not go into so much detail, and for this it is none the worse. The author keeps to the essentials and deals with them very lucidly and simply, so that no intelligent woman could fail to understand the teaching he inculcates. Furthermore, the book breathes a certain atmosphere of placid confidence and encouragement which should bring comfort to many a young woman looking forward to her first confinement with some not unnatural trepidation. Dr. Howat's book is not only a safe and sound one to put into the hands of any such woman, but it is, in our opinion, superior in several respects to the general run of such volumes.

A new edition of the *Pharmacopoeia of King's College Hospital*[9] has just been published, sixty-five years after the appearance of the first. In addition to some 85 pages of useful and well-tried prescriptions the little volume includes valuable notes on the preparation of foods, infant feeding, diet in diabetes, urine and other tests, external therapeutic methods, poisons and their treatment, and a table of doses, etc.

BOOKS FOR MOTHERS.

So many books are written nowadays for the improvement and education of mothers in the art of bringing up their children that one almost wonders that matrimony survives as it does. *Sex for Parents and Teachers*[10] is a somewhat sentimental work adorned with quotations from the best authors and poets, in which the processes of generation in plants and animals are traced, and subjects like marriage, purity, and eugenics are discussed in a manner devoid of offence. *The Care of the Adolescent Girl*[11] deals with the psyche of the budding girl, the sublimation of libido, love, and the future of the adolescent female. This is a rather abstruse and perhaps unpractical volume, conceived on Freudian lines, and suitable only for the emancipated woman. *Woman from Bondage to Freedom*[12] is a stirring blast of dogma, written for the American public, and encouraging women, mothers included, to take their rightful place in the world. *The Prospective Mother*,[13] by Professor SLEMONS, may be recommended to those in search of a sensible and simple book on the subject with which it deals. *The Mental Hygiene of Childhood*,[14] by Dr. WHITE, is a book for those who wish to have placed before them their responsibilities as bringers-up of young children. If boys are bad boys, it is the parents that are to blame; and family life is a thing that children can have too much of. Dr. White traces most motives to the sex instinct; his book may be recommended to the discriminating reader.

[8] *The Threshold of Motherhood: A Handbook for the Pregnant Woman.* By Dr. R. Douglas Howat, L.R.C.P. and S. Edin., L.R.F.P.S. Glasg. Glasgow: Maclehose, Jackson, and Co. 1922. (Pp. 49. Price 3s. 6d. net.)

[9] *The Pharmacopoeia of King's College Hospital.* Compiled with the assistance of E. B. Fairweather, F.C.S., M.P.S. London: Adlard and Son and West Newman, Ltd. 1922. (Fcap. 16mo, pp. xii + 169. 3s. 6d.; interleaved, 4s.)

[10] *Sex for Parents and Teachers.* By W. L. Stowell, M.D. New York: The Macmillan Co. 1921. (Cr. 8vo, pp. 224. 17s. net.)

[11] *The Care of the Adolescent Girl: A Book for Teachers, Parents, and Guardians.* By Phyllis Blanchard, Ph.D. With prefaces by Dr. Mary Scharlieb, C.B.E., M.S., and Professor G. Stanley Hall, Ph.D., LL.D. London: Kegan Paul, Trench, Trübner, and Co., Ltd. 1921. (Demy 8vo, pp 222. 7s. 6d. net.)

[12] *Woman from Bondage to Freedom.* By R. H. Bell. New York: The Critic and Guide Co. 1921. (Post 8vo, pp. xv + 230.)

[13] *The Prospective Mother: A Handbook for Women during Pregnancy.* By J. Morris Slemons. Second edition. New York and London: D. Appleton and Co. 1921. (Cr. 8vo, pp. 351. 9s. net.)

[14] *The Mental Hygiene of Childhood.* By W. A. White. Mind and Health Series, edited by H. Addington Bruce, A.M. London: W. Heinemann. 1920. (Cr. 8vo, pp. 208. 6s. net.)

THE OXFORD AND CAMBRIDGE REPORT.

IN November, 1919, a Royal Commission was appointed in consequence of applications from Oxford and Cambridge for permanent grants from public money to meet the increased costs resulting from the war. The Commission was instructed to inquire into the financial resources of the universities and their colleges, into the application of these resources, into the government of the universities, and into the relations of the colleges to the universities. Mr. Asquith was chairman of the Commission, which worked in three sections—Oxford, of which he was chairman; Cambridge, of which Mr. Gerald Balfour was chairman; and Estates Management, of which Lord Ernle was chairman. The report, issued at the end of last week, falls into three parts: The first is a general review, the second gives the detailed recommendations of the Commission, the third contains the report of the Estates Management Committee. We may dismiss the last part by saying that the Commissioners recognize that it would be unwise to part with land which may be required for the expansion of universities and colleges, and for the development of schools of agriculture, or land which has any value for building or mineral development.

The general review in the first part of the report contains an historical survey, the most striking feature of which is the enumeration of the advantages the universities of Oxford and Cambridge have derived from possessing residential colleges, the institution of which began as long ago as the thirteenth century.

SCIENTIFIC DEPARTMENTS.

The Commissioners note that a considerable amount of time is still spent in the university laboratories of Oxford and Cambridge on instruction in elementary science which could be given at school; this is rendered necessary by the fact that there are still many schools in which the provision of scientific instruction, and more especially laboratory practice, is insufficient. As elementary teaching must therefore be continued in the universities, the Commissioners consider that there is much to be said for the erection at both universities of light and cheaply built laboratories of one story to serve for elementary instruction in all subjects and for examinations. In this way space would be set free in the present university buildings.

The Commissioners are of opinion that a large proportion of the laboratory fee for ordinary students and the whole fee for research students should be paid into departmental funds. The modern universities have recently raised their fees by from 30 to 50 per cent. without provoking comment or affecting the number or type of students. The conclusion is that there is no reason why ordinary students attending laboratories at Oxford and Cambridge should not pay fees up to £50 a year, and full-time research students a similar sum. Every research student or investigator in a scientific laboratory involves a serious expense to the university, and the cost must, so far as it is not met from fees, fall on the general funds of the university. It is suggested that British universities should adopt a uniform policy with regard to the matter of fees paid by research students, more especially by those coming from foreign universities.

Oxford.

The report states that the original application for parliamentary grants, which led to the appointment of the Royal Commission, was an appeal from the heads of the scientific departments submitted to the Board of Education in March, 1919, asking for an annual grant of about £17,200 in respect of sixteen departments, and for a capital sum of £163,000 to meet the requirements of six of their departments. The annual grant asked for was only intended to provide for the work as it had been carried on before the war, and it was stated that further grants would be required as the departments expanded, and that in all probability a larger proportion of undergraduates would study science in future. The Commissioners recognize that Oxford has for a long time been unable to play her full part in scientific teaching and research, and that though many generous benefactions had been received they were not comparable to the large sums which scientific studies had attracted to many other universities in recent times. The teachers have been too few, and on the whole inadequately paid. In several instances the accommodation is insufficient and the equipment incomplete. The number of students, and particularly of research students, has been in some instances lamentably small, and,

in spite of brilliant exceptions, the output of work less than should be expected. The Commissioners consider that a great opportunity has come for science in Oxford, and note that the Natural Science School has grown rapidly, the number of candidates in the final honours school having risen from 96 in 1914 to 174 in 1921. Although in the seventeenth century Oxford had a brilliant group of scientists, the honours school dates only from 1853, and the real development of the modern science school from the erection of the university museum (1855–60). This has had a marked influence upon the conditions of science teaching and research in the university, and in accordance with the original scheme the scientific departments have grown up around the museum and in close association with it. This system of concentration had many obvious advantages, but owing to the area being restricted difficulties of accommodation have arisen and there is no comprehensive scheme of future development. Still the Commissioners consider concentration so important that they favour a proposal, made by the heads of scientific departments, that a proportion of ground in the University Parks, including the present museum and observatory, and amounting in all to fifteen acres, should be reserved for scientific extensions and developments. The Commissioners consider that more accommodation is urgently required, but hold that the details should be left to the decision of the university. Owing to the difficulty of establishing university laboratories a few colleges built laboratories for specific purposes; they have been of the greatest possible value, but they have now become inadequate both in size and equipment, and it is considered that teaching should be provided in one or more university laboratories.

Cambridge.

The Commissioners state that "during the last century the science schools at Cambridge have acquired a position which it is no exaggeration to say is unique in the history of science. They have been centres of fundamental researches in almost all branches of science, as well as training grounds for teachers who have become eminent in their subject and have filled important appointments in many of the universities of the empire. The activities of these schools show no sign of slackening, and the task before the university is to maintain the present position rather than to introduce reforms, except such as are necessitated by the changing conditions of the time." The Vice-Chancellor informed the Commission that to achieve this end an additional annual sum of not less than £14,300 is required for the scientific departments, excluding medicine, and that £7,000 a year is needed for medicine, including £2,100 for human anatomy. In addition large sums are still needed for building purposes.

Financial Proposals.

The Commission recommends that both universities should have full power to fix professorial stipends. It is considered that the average normal stipends now paid to professors and to other teachers and officers of the university are wholly inadequate, and the Commission recommends that the normal stipend of a whole-time professor (for the year 1921) should be about £1,200 a year, but that the stipends of readers and university lecturers should be fixed in accordance with the needs of the work. It is further recommended that the federated superannuation system of the universities should be applied to both Oxford and Cambridge, and that a special grant should be paid by the University Grants Committee to recognize past services for pension.

The Commissioners find that the available incomes of the universities and the colleges together, including the existing emergency grant (£30,000 paid by the State and certain older State grants for specific purposes) amounted in the year 1920, at Oxford to £824,710, and at Cambridge to £719,554 (excluding certain payments received from undergraduates for service). Though these figures are impressive and show that the universities and colleges have at their disposal a very large revenue, even without the State grants already paid to them, the Commissioners are clearly of opinion that the sums available are totally insufficient to meet the existing needs of the universities and colleges; they therefore recommend:

1. That annual grants be paid by the State to each university as follows:

For general purposes	£90,000
For the Bodleian Library, Oxford, and the University Library, Cambridge	£10,000
	£100,000

2. That, in addition, a lump sum be paid for pension arrears.
3. That special annual grants, on the following basis, be paid to each university:

For the Women's Property Committee or similar body (for a limited period of 10 years)	£4,000
For the Extra-mural Board	£6,000
	£10,000

OPERATIONS FOR TONSILS AND ADENOIDS.

RECOMMENDATIONS BY THE COUNCIL OF THE SECTION OF LARYNGOLOGY OF THE ROYAL SOCIETY OF MEDICINE.

THE Council of the Section of Laryngology of the Royal Society of Medicine has drawn up the following memorandum on the general hygienic conditions which should be observed in performing operations for the removal of tonsils and adenoids. It has forwarded a copy to the Minister of Health, and the memorandum will doubtless also receive careful consideration from the President of the Board of Education.

Memorandum.

In view of the great number of children requiring operations for the removal of tonsils and adenoids, and of the varying standard of the provision made by hospital and local education authorities for such operations, the Council of the Laryngological Section of the Royal Society of Medicine, after careful consideration, desire to make the following suggestions:

1. That all clinics, whether at hospitals or schools, should be in the charge of surgeons with special experience of diseases of the nose, throat and ear, so that, *inter alia*, a wise selection may be made of cases requiring operation, and others not requiring operation may be appropriately treated.
2. That all patients requiring operations for tonsils and adenoids should have in-patient institutional treatment, and that a stay of at least forty-eight hours should be insisted on, and a further stay if thought advisable by the medical officer in charge.
3. That parents should be given printed instructions as regards the preparation of the patient for operation, and of the room to which the patient will return.
4. That before the patient is admitted for operation inquiries should be made by a responsible authority as to the home conditions and circumstances, especially with reference to the presence of infectious disease.
5. That when the patient leaves the hospital printed instructions with regard to after-treatment should be given (as per scheme appended).
6. That anaesthetics should be given by anaesthetists with special experience of these operations.
7. That after the patient leaves the hospital with the printed instructions for after-treatment arrangements should be made for the supervision of a qualified visiting nurse.

The Council were of the opinion that where it is impossible in large cities to provide hospital accommodation for all the cases the provision of open-air buildings near the city, adequately equipped for operative treatment, would offer many advantages. These would be specially useful in connexion with school clinics.

Until such provision of adequately equipped in-patient clinics can be arranged, and where it is not possible to keep every child in hospital for forty-eight hours after operation, and the child is operated on in an out-patient department, the Council recommend that several further conditions should be fulfilled:

1. That printed instructions should be given to the patient with regard to preliminary preparation, and investigation should be made beforehand—for example, by a "care committee" or a visiting nurse—as to the adequacy of the home accommodation and supervision, and also the absence of adverse sanitary conditions, risks of contagion, etc.
2. That proper waiting-room accommodation should be provided for patients before operation.
3. That the recovery room should be scrupulously clean, warm and well ventilated, and provided with separate beds or couches for each patient.
4. That patients should be detained in the recovery room until pronounced fit to leave by the surgeon in charge or his deputy.
5. That the recommendation that the child should be visited by a nurse after discharge from the hospital should be insisted on with even greater force in the case of children who are denied the safeguards of in-patient accommodation.
6. That every child who is sent home on the day of operation should be transferred by an ambulance or hired conveyance. Travelling by public tram, bus, or train so shortly after operation is most undesirable, and a source of distress and often of infection.

(Signed) W. MILLIGAN, *President of Section.*
WALTER G. HOWARTH, T. B. LAYTON } *Secretaries of Section.*

March 22nd, 1922.

British Medical Journal.

SATURDAY, APRIL 1ST, 1922.

THE ROUTINE OF OPERATIONS FOR TONSILS AND ADENOIDS.

THE question whether the present arrangements for operating upon tonsils and adenoids in out-patient departments of hospitals and clinics, under which the children are commonly sent home soon after recovering from the anaesthetic, constitutes a proper way of dealing with the condition was raised in our columns in November, 1919, by Mr. Douglas Drew, who had the support of Dr. Peter Macdonald. A fresh stimulus was applied in an article by Mr. E. Watson-Williams, published on December 11th, 1920, in which it was pointed out that the morbidity among children operated on in an out-patient department was over four times as great as among the in-patients. Towards the end of 1920 and at the beginning of 1921 many letters were published in this JOURNAL, dealing with the subject from different angles, and to this correspondence most of the leading throat surgeons of this country contributed. The general opinion was that although it might not be reasonable under present financial conditions to expect hospital authorities to provide the necessary accommodation for the ideal treatment of these cases, yet something ought to be done to enable the children to obtain full benefit from the operation while lessening the risk of complications following it. If the choice of the surgeon lay between operating under the present comparatively unsatisfactory conditions, or not operating at all, then the gain to health by performing the operation was thought to be greater, even taking the risks into consideration, than by not performing it.

The problem has been taken up at this point by the Council of the Section of Laryngology of the Royal Society of Medicine; after careful consideration this body, whose right to give an authoritative opinion will be generally recognized, has made a number of suggestions, which are published at p. 526 of this issue. All cases of enlarged tonsils do not, of course, require operative treatment, and the first of the Council's resolutions emphasizes the need for adequate experience in diseases of the ear and throat by the surgeon in charge of the clinic, so that only those cases for which operation alone can suffice should undergo it. Where, however, the enlarged tonsils are actually diseased, and where adenoids are also present, operative treatment is rightly believed to be the only treatment worth considering. In some newspapers it has lately been suggested that operative treatment was unnecessary for tonsils and adenoids, and that some so-called medicinal treatment should suffice. Though much of the criticism was ill-informed, or expressed in exaggerated terms, yet it rested upon a certain substratum of fact, and it is for the medical profession to take steps to remedy defects in administration which can be shown to exist. Several abstracts of papers published in foreign medical periodicals recommending treatment by x rays have recently been published in the EPITOME, but no authority in this country has so far suggested that x rays could do more than diminish the size of enlarged, but otherwise healthy, tonsils. In slight cases of adenoids, and when the patient can be placed under good hygienic conditions, iodine in various forms (chiefly certain of the iodides) has been proved to be useful, but its curative value has very definite limitations.

The value of operative treatment for tonsils and adenoids is so widely recognized that the demands have outstripped the resources of the hospitals. The education authorities have done much for the children under their supervision, and in some areas have gone far towards making good the shortage in the voluntary hospital facilities for the treatment of ear and throat diseases; but in many districts even to-day the facilities for the proper treatment of enlarged tonsils and adenoids are lamentably defective, and it must, we fear, be admitted that in some hospitals and clinics the conditions under which the operations have to be performed are far from being in accord with the principles of modern surgery. Although it is clearly impossible to accomplish all that is desirable, since the operations are often urgently required, it is not too much to demand that proper precautions should be observed and proper facilities provided. The Council of the Laryngological Section recommends that in all cases the child should be kept under observation in suitable surroundings for at least forty-eight hours after tonsils and adenoids have been removed, and points out that the period of detention may have to be prolonged should the medical officer in charge consider it advisable. It is suggested that where, in large cities, it is not possible to provide hospital accommodation the provision of an open-air building near the city, adequately equipped for operative treatment, would offer many advantages and would be specially useful in connexion with school clinics. Where all the children operated on cannot be kept in hospital for forty-eight hours much may be done, while waiting for the establishment of adequately equipped in-patient clinics, by a "care committee" or a visiting nurse, who would make preliminary preparations before the operation and visit the patients after they have returned home from the recovery room. The recommendations put forward by the Council of the Section of Laryngology are reasonable and expressed in guarded language. We hope that they will be acted upon by education authorities in consultation with the hospitals. If the former, through their medical officers, take the responsibility, as they do, of advising and insisting upon children being operated upon, and if, as appears to be the case, the courts of law support them in this course of action, every effort should be made to ensure that the operation is rendered as free from risk of complication as possible.

ATMOSPHERIC POLLUTION.

THE Meteorological Office, under the Air Ministry, has issued the seventh report[1] of its Advisory Committee for the Investigation of Atmospheric Pollution. The report deals with observations made in the year ending March 31st, 1921. It contains many tabular statements, various charts, and a large amount of detail relating to the work of that year. It includes also an article by J. R. Ashworth, D.Sc., on a twin atmospheric pollution gauge, and three articles by J. S. Owens, M.D.—on the November fogs in London, dust in expired air, and the relation of visibility to suspended impurity.

The report discusses, in guarded terms, the effect of suspended impurity on health. Statistics of the daily death rate in London for the quarter ending December 31st, 1920, obtained from the Registrar-General, were correlated with the data of atmospheric impurity. The death-rate curve would of course follow, not coincide with, the impurity curve if cause and effect were the relation between them; a diagram given in the report indicates some degree of sequence compatible with that thesis. A complicating factor, however, is pointed out in respect of temperature, which is lowest when

[1] H.M. Stationery Office; through any bookseller. 2s. net, or direct by post 2s. 1½d.

atmospheric impurity is highest, so that the doubt arises whether a subsequent rise of death rate may not be due to the cold rather than to the fog, and the Committee cautiously concludes that "on the whole there is no very obvious relationship between the quantity of impurity in the air and the number of deaths in London." This is a kind of question in which the experience of wide-awake practitioners of medicine as to the effects of fog and cold in setting up fatal respiratory attacks amongst the aged would afford valuable information, to be considered along with the observations and inquiries of the Advisory Committee. In a brilliant address given a good many years ago before the Sanitary Institute by that distinguished scientist the late Sir William Ramsay, much mischief was attributed to atmospheric smoke as directly limiting access of sunlight to manufacturing cities. Its influence on tuberculosis would naturally be thought of in that connexion.

For measuring suspended impurity in London three automatic instruments have been set up—one at South Kensington, another at Kew Observatory, and the third at Victoria Street, Westminster. Particulars, illustrated diagrammatically, are given regarding the observations at Westminster on foggy days, distinguishing week-days from Saturdays and Sundays, when industries and factories are mostly closed down. Curves of observations at the same station are shown for similar groups of days without abnormal fog. It is pointed out that certain features are common to all the curves. The air is purest between midnight and 6 or 7 a.m. A rapid increase of impurity begins about 6 a.m. on week-days, but about an hour later on Sundays. The maximum for the day is reached about 10 to 11 a.m. on week-days and 11 to 12 on Sundays. Then there is a rapid fall until a second, but lower, maximum appears about 4 or 5 p.m., which may continue till about 8 p.m.; after that hour there is a fall until the minimal period, beginning about midnight, is reached. The obvious relation of these curves to human activities is remarked on—the lighting of morning fires, the tea-time rise in the afternoon, and the night period when neither domestic nor factory fires are in operation. The difference between the week-day and week-end data is related to the absence of factory smoke. The ratio of factory to domestic smoke measured in this fashion was 1 to 2.25 at Westminster and 1 to 2.15 at South Kensington. In these parts of London, therefore, domestic smoke seems to be more than double the factory or industrial smoke. The observations refer to the period from October to March, the season when domestic heating is in constant action. Probably there is less seasonal difference in factory than in domestic firing, but that point is not discussed in the report. It is, however, pointed out that London is not a manufacturing city, and that the ratio in such a city would doubtless be different.

The number of stations throughout the country at which observations were made during the year was thirty-one. Of these, six were in the London County Council's area, three in Birmingham, one each in Newcastle, Hull, and Liverpool, and no fewer than nine in Glasgow. The preponderance of Glasgow is remarkable, but it would be unfair to assume that the figures represent the comparative prevalence of smoke in the places named, otherwise the absence of any station in Manchester would suggest its special suitability as a health resort. On the other hand, they cannot be taken as indicating the relative enthusiasm or success of the respective municipalities in the abatement of smoke, for in that case Glasgow might set up its claim for exceptional salubrity. The Lord Provost of that city, however, speaking as member of a deputation the other day to Sir Alfred Mond (we were not aware that Scotland is under his jurisdiction), claimed that in taking proceedings under the Scottish Act it is not necessary to prove, as in England, that the smoke is "black," but only that it is a nuisance. This seems certainly an advantage. The Lord Provost is, no doubt, right in holding that the solution of the domestic problem is cheap gas and electricity, but it will, we fear, be a long time before the public and their landlords are persuaded to give up open fireplaces, and Sir Alfred Mond was careful to emphasize this doubt in his cautious reply to the deputation. He promised, however, to do his best to prevent the valuable report of Lord Newton's Committee from being pigeon-holed.

A NEW ANTIVIVISECTION BILL.

WE published last week (p. 492) an analysis of the provisions of a "Cruelty to Animals Bill" which Lord Lambourne has introduced in the House of Lords. We cannot believe that it will be allowed to pass through the House of Lords as its stands now, for to those who remember the final report of the Royal Commission on Experiments on Animals in 1912 this bill seems merely an attempt to reverse the position which was decided on ten years ago.

Lord Lambourne, when he was Colonel Lockwood, was a member of that Commission. He represented antivivisection, and his name was on the vice-presidents' list of one of the antivivisection societies, but we have reason to believe that it did not long remain there. He was very courteous throughout to the representatives of our science and art; and it is especially to be noted that he carefully stated, in the House of Commons, at the time of the publication of the Commission's Report, that the Commissioners, with regard to Dr. Crile's experiments in 1895, had carefully searched through the whole question and believed that the animals used in those experiments were absolutely senseless, and without pain.[1] Antivivisection has said such things about those experiments that we are glad to recall this statement concerning them.

The Commission ceased to hear evidence early in 1908, but its final report was delayed till March, 1912. We can be sure that much of the delay was due to the desire for unanimity; indeed, Mr. Ram, who succeeded Lord Selby as chairman, was determined that the report should be unanimous. Anybody who will read the report now will observe how it slurs over much that it ought to state emphatically. This slurring is plainly due to the desire to bring all the Commissioners into line. Possibly this was the wisest course. Every one of the Commissioners signed the report. Though there was no minority report, three of them—Colonel Lockwood, Sir William Collins, and Dr. Wilson—signed the report subject to a memorandum, which was appended to it. The Commission recommended certain changes in the administration of the Act. These changes were duly accepted by the Home Office, which alone administers the Act. None of them involved any change in the wording of the Act, so that there was no need for legislation.

The Act, as we all know, is ill drafted, clumsy, and antiquated. It is forty-six years old. It became law in 1876, when there was virtually no bacteriology. It makes no provision for that study. Even now the Home Office has to schedule a bacteriological experiment under Certificate A, which is the certificate dispensing with anaesthetics: thus, many experiments which cause no pain, or are altogether negative, are still reckoned by some members of the public as "vivisection." The Act ought to have been simplified long ago. Still, the Commission was of opinion that "the present system, although open to adverse criticism which has been indicated, has nevertheless been so

[1] Parliamentary Debates, vol. xxxv, No. 20, p. 1015.

worked as to secure a large degree of protection to animals subject to experiment, and at the same time so as not to hamper or impede research. Such a system, to which all the parties affected have by long experience become habituated, should not, in our opinion, notwithstanding its imperfections, be lightly thrown away. We believe it to be capable of improvement, and we have made several recommendations calculated, as we believe, more effectually to secure the objects aimed at by the Act."

The Commission therefore recommended: (1) That the inspectorate should be increased; that the chief inspector should be a whole-time officer, and that there should be in addition to him three whole-time inspectors for Great Britain. (2) That an inspector should be present at any experiment in which curare was used, and should satisfy himself that the animal, throughout the whole experiment and until its death, was in a state of complete anaesthesia. (3) That an inspector should have power to order the painless destruction of any animal which, having been the subject of any experiment, showed signs of obvious suffering or considerable pain, even though the object of the experiment might not have been attained, and that in all cases in which, in the opinion of the experimenter, the animal was suffering severe pain which was likely to endure, it should be his duty to cause its painless death, even though the object of the experiment had not been attained. (4) That an advisory body should be appointed by the Home Office, from a list of names submitted to the Home Secretary by the Royal Society and the Royal Colleges of Physicians and Surgeons in London, and that no person so elected should be the holder of a licence.

These recommendations were adopted by the Home Office, which for ten years has administered the Act wisely and carefully. Now comes Lord Lambourne's amazing bill. We call it his bill, but it seems the work of Mr. Stephen Coleridge at his worst. For example, it demands that the Home Secretary, in the granting of a licence, "shall pay special regard to the applicants' reputation for humaneness." That is Mr. Coleridge all over. Again, it demands that curare shall not be used or administered for the purpose of or during an experiment. That likewise is Mr. Coleridge all over. Professor Starling thoroughly explained to the Commission the use of curare, not instead of an anaesthetic, but for a specific purpose which would not interfere with perfect anaesthesia. This use of this very rare drug is absolutely painless. The Commission went too far in 1912, when it recommended special precautions about curare; and now Lord Lambourne would go a great deal further.

Now we come to a very bad fault of this bill. It proposes that "a licence shall not authorize the performance of more than one experiment, or one series of not more than six connected and consecutive experiments." In the testing of milk, the standardizing of drugs, and much work done for Government and various public bodies, many experiments are made; they do not involve any operation, but they are very numerous. For instance, to go so far back as 1908, no fewer than 12,500 observations were made for the Royal Commission on the Disposal of Sewage. Young fishes and fishes' eggs were exposed to the influence of effluents in different stages of purification and dilution. That is all that was done to them. Yet every one of these 12,500 observations was counted by the Home Office. With Lord Lambourne's bill that would require 2,083 licences. A worse fault of this bill is the demand that an inspector shall be present throughout the whole of any experiment involving an operation. This legion of useless inspectors would be in the way; they would do no good, and they would be a heavy expense to the tax-paying public. The worst fault in the bill, however, is the demand that no animal after operation shall be kept for observation. When we look back over the past forty years of physiology and surgery in this country we see how this extraordinary demand is calculated to ruin our physiology and surgery in more ways than one.

Perhaps Lord Lambourne is planning to give way over some points, and to save enough of his bill to stir up the Home Office. That would please some of his advisers. But the Home Office is not likely to play fast and loose with the report of 1912. And we may doubt whether we shall hear anything more of this curiously perverse bill.

THE CONFERENCE OF HOSPITAL STAFFS.

In the SUPPLEMENT of this issue is published a full report of the proceedings of the conference of members of the staffs of voluntary hospitals held in London on March 22nd at the instance of the Council of the Association. The report of the Council on the organization of voluntary hospitals, published in the SUPPLEMENT of February 25th, was under consideration. The proceedings occupied a whole day, there was a good attendance, and the report is a sufficient indication of the keenness of the interest shown. The report of the Council is a long document, dealing with many matters of principle and detail, and that its fifty or more recommendations should have been considered seriatim in an open conference of hospital staffs from all parts of England and Wales, and approved by heavy majorities in all essential respects, is strong testimony to their general applicability. The keenest discussion centred around a few crucial recommendations. Chief amongst these was paragraph 33, or what is commonly known as the Leicester resolution, and until this was disposed of (at the opening of the afternoon session) the morning's debate tended again and again to turn to its subject. At the outset it was clear that the conference accepted without demur the paragraph recommending that "indigent" patients—those certified by the almoner or other officer of the hospital as unable to contribute in any way towards their maintenance and treatment—should receive hospital benefit through the gratuitous contributions placed at the discretion of the hospital managers and by the gratuitous services of the honorary medical staffs. There was no doubt of the complete unanimity of the meeting on this head. Further, the conference was unanimous in agreeing to the recommendation that when the Board of Management of a voluntary hospital enters into a financial arrangement with a public authority, an employer of labour, approved society, insurance company, or under a contributory scheme, or otherwise, for the reception of patients, such arrangements should be taken to cover the cost of maintenance and treatment, and a percentage of all such receipts should be passed into a fund which is at the disposal of the honorary medical staff of that hospital. There was thus complete agreement on the two extreme positions of the problem; it was on the intermediate position that difficulty arose. The point at issue was whether or no the part-paying patient should have the gratuitous services of the staff. On the one hand it was argued that to take a toll on the small payments of these patients would be mean, on the other hand that as a matter of principle a payment by a patient removed him by that degree from being a charity patient, and that unless this principle was recognized there would be no limit to the extension of part payments. The Leicester resolution was carried by a large majority (85 to 28.) This is the fourth time this resolution has been submitted to a considerable body of the profession and carried; the three previous occasions were the conference of hospital staffs in December, 1920, the Representative Meeting in July, 1921, and the Conference of London hospital staffs in November, 1921. To judge by the speeches at the meeting last week, it would appear that the minority opposed to the resolution was mainly composed of representatives of the larger teaching hospitals. There is little doubt that members of the staffs of these hospitals are in an exceptional position as compared with their colleagues at other voluntary hospitals to which medical schools are not

attached. Nevertheless, not a few members of the teaching hospitals argued forcibly for the necessity and justice of this recommendation. The definition of the voluntary hospital gave rise to a brisk debate not unrelated to the foregoing considerations, but little was said beyond what has appeared in a recent correspondence in our columns. The sections of the report dealing with the new matter of contributory schemes were received with a remarkable degree of unanimity, particularly the recommendation that no insurance risk should be taken by the hospitals themselves, lest it should limit their independence in the selection of patients and involve the diversion of the charitable funds of the hospital; so also was the recommendation that consultation and specialist services under such schemes should be arranged at the homes of the doctors or patients, and not at out-patient departments. There was some criticism of the classification of patients under the terms: Free (indigent), Tariff, and Private, but it was finally accepted as the simplest and most explicit. Certain recommendations dealt with the more intimate relations of the members of hospital staffs themselves, and these had varying fates. Some that appeared to trench upon the prerogatives of the staffs were rejected; but a recommendation that the age limit or tenure of office of members of honorary staffs should where necessary be so modified as to allow more and younger practitioners to obtain responsible hospital experience received a very generous reception and was agreed to unanimously. This is the third conference of hospital staffs which has been called by the Association, and the response thereto on this, as on former occasions, indicates that the opportunity for these open discussions is greatly valued.

CALCUTTA SCHOOL OF TROPICAL MEDICINE.

THE School of Tropical Medicine and Hygiene and the Carmichael Hospital for Tropical Diseases at Calcutta were opened by Lord Ronaldshay, Governor of Bengal, on February 4th. In our issue of December 3rd, 1921 (p. 957), it was noted that the School of Tropical Medicine and Hygiene had begun work in the previous November, when a telegram of congratulation, announcing that the first lectures had been given, had been sent by the director, Lieut.-Colonel J. W. D. Megaw, I.M.S., to Sir Leonard Rogers, who played the leading part in the inception and carrying through of this great enterprise. In the JOURNAL of April 23rd, 1910 (p. 1010), the very great advantages which Calcutta offered for the establishment of a school of tropical medicine were pointed out; not only is the variety of clinical cases illustrating tropical diseases unsurpassed, but there is an excellent hospital and medical school, with a highly qualified staff accustomed to teaching, and for the greater part of the year the climate is no drawback. Some eleven years ago the general scheme for the school of tropical medicine was worked out by Sir Leonard Rogers, but its subsequent history has been marked by many delays, not a few of them to be traced to the war; the foundation stone was actually laid by Lord Carmichael, Governor of Bengal, in February, 1914. The hospital has accommodation for about 100 patients, European and Indian, while the school has chairs of tropical medicine, pathology and bacteriology, protozoology, pharmacology, serology, public health, and chemistry, to which appointments have already been made; professors of hygiene, entomology, and biochemistry have still to be appointed. In addition, there are assistant professors of the chief subjects, and a number of special research appointments have been made. The nucleus of a reference library has been formed, mainly by gifts from Sir Leonard Rogers. In the report of the director for 1921 it is stated that classes will shortly be opened for the diploma in public health of Calcutta University; classes for the diploma in tropical medicine have already begun. The director considers that the result of the first year's working has entirely removed the doubts and fears which assailed him when he entered on his responsible duties. Considerable progress has also been made in the research laboratories, and reports have been published of work in connexion with leprosy and kala-azar and filariasis, and on the work of the hookworm laboratory.

THE SPECIAL SURGICAL HOSPITAL, SHEPHERD'S BUSH.

THE decision to retain the Special Surgical Hospital for wounded soldiers at Shepherd's Bush, instead of removing it to the huts recently occupied as the South African Military Hospital in Richmond Park, will be received with widespread satisfaction. It was generally thought that no other course was possible in view of the debt which we owe to the men who are still suffering from injuries inflicted during the war. As the dispute between the Ministry of Pensions and the Hammersmith guardians has been settled, the actual terms of the agreement are of little consequence. We all recognize the necessity for economy, but nothing would have justified the practising of an economy at the expense of these ex-service men who still are in need of treatment. During last year nearly 4,000 officers and men were under treatment in the hospital, nearly 2,500 operations were performed, and there was a total of over 101,000 out-patient attendances. There are thousands of wounded men still under treatment, many of them grievously injured, and it is clearly the duty of the country to do what is best for them. For the sake of these men we rejoice that a way out of the deadlock has been found and that the hospital, with its elaborate equipment of baths, gymnasiums, workshops, and departments for electrical treatment and massage, will be allowed to continue its most necessary and beneficent work. The settlement which has been reached cannot, however, be considered as final. It is essential to look forward to the time when some permanent provision will have to be made for those wounded men who may from time to time need operation or treatment, after the present buildings have had to be given up. A hospital with a large out-patient department will be needed. The country will not tolerate any attempt to treat these chronic and mostly incurable cases under conditions which would not for a moment be sanctioned for a Poor Law infirmary. The problem is by no means an easy one, but unless those in authority exercise foresight, no adequate provision will, when the time comes, have been made for the suitable housing and proper treatment of those ex-service men whom we are bound in honour to care for as long as they are in need of help.

THE DANGERS AND LIMITATIONS OF SALVARSAN.

THE full dress debate on salvarsan at the Berlin Medical Society, which took place on January 25th, and which is reported in *Deutsche medizinische Wochenschrift* for February 16th, was marked by a certain reticence on the part of speakers conscious of the agitation against salvarsan in the daily press and of the likelihood that admissions of failures and disasters would be relentlessly exploited by the lay critics of salvarsan. One of the speakers, Arndt, admitted that although every precaution had been taken, there had been several waves of fatalities. He himself had observed only four deaths between 1914 and 1918; in 1919 he had seen none, and in 1920 he had again seen none, although he had given 24,000 injections in that year. But in 1921, during which year he had given 14,000 injections, he had had eight deaths. With regard to the frequent occurrence of acute or subacute yellow atrophy of the liver, he said that most of the patients were over 40, and that salvarsan jaundice was most common in connexion with tertiary syphilis. Owing to salvarsan fatalities the dosage had been reduced, and the exhibition of the drug had been limited in the main to primary and secondary syphilis; these two precautions had practically eliminated salvarsan jaundice. He was inclined to treat almost every case of tertiary syphilis with iodine and mercury only. The results they produced were quite satisfactory. He never gave more than 0.45 gram to men nor more than 0.3 gram to women at one injection, and his total dose for men and women was 4.0 and 3.6 gram respectively. He had often observed

a change in the temperature curve as the only sign of impending salvarsan poisoning, and he took this sign as an indication for immediate cessation of treatment. Recent improvements in the manufacture and control of salvarsan were discussed by Kolle of Frankfurt. The control, he said, was becoming closer, and a keen watch was kept for specially neurotropic consignments of salvarsan by biological tests on rats. He believed, however, that the angio-neurotic complications of salvarsan preparations were mainly due to the metallic salts they contained, and as these properties could not well be tested on animals, it was necessary to test consignments of salvarsan clinically; when they betrayed these undesirable properties after the administration of small doses the particular consignment concerned would be withdrawn from the market. He referred to the detoxication of salvarsan by the addition of a 40 per cent. solution of grape sugar (*Epitome*, February 4th, 1922, No. 102), but he had grave misgivings as to the wisdom of combining salvarsan with mercurial injections. Of the various salvarsan preparations, neo-silver-salvarsan had impressed him most favourably, and experiments on animals with salvarsan alone, and salvarsan *plus* mercury, had shown him that within thirty days of infection a *sterilisatio magna* was feasible in 100 per cent., as shown by the animals' susceptibility to re-infection. But ninety days after infection not a single animal was cured. Both these speakers, it will be observed, emphasized the value of salvarsan early in syphilis and its comparative futility late in the disease.

PROFESSIONAL PROTECTION SOCIETIES AND INCOME TAX.

FROM inquiries which have reached us it is clear that there is some doubt as to the admissibility, as deductions for income tax, of payments charged in the statement of professional expenses in respect of subscriptions to societies whose purpose it is to assist the medical practitioner in defending himself from attack. The growth of this form of co-operation has now covered almost the entire professional and industrial field, and in the case of large commercial concerns considerable amounts are sometimes involved. It is, of course, clear that in such cases the subscriptions may be intended to serve many objects, some of which—for instance, the provision of a pool of profits for distribution among the members during strikes or lock-outs—may not provide legitimate grounds for treating the payment as an expense proper to an income tax calculation of profit. The leading case on the point is known as the Lochgelly Iron and Coal Company, Limited, *v.* Crawford; the effect of the decision in that may be said to be that so much of each subscription may be deducted as represents the portion expended on objects which would have been good ground for a claim by the individual member if he had made the payment direct; in other words, the subscription must be divided according to the legitimacy for income tax purposes of the ultimate expenditure. If, for instance, 25 per cent. of a medical defence society's subscriptions for 1921 is expended in building up a reference library or some other object involving "capital" outlay, and the remaining 75 per cent. is spent on defending the professional conduct of its members, then under the Lochgelly decision each member can claim to deduct 75 per cent. of his subscription. One or two minor points may be mentioned. It will be seen that it is not necessary to trace the expenditure of any individual subscription—an impossible task. The judges in the Lochgelly case seem to have accepted as a matter of course the idea that the proper basis was furnished by the aggregate expenditure, without inquiring as to how the Lochgelly company itself actually derived any benefit. Also it has to be borne in mind that this case related to Schedule D; it is probable that under the stricter Schedule E rule no such allowance would be upheld in the courts. In the third place, although a substantial portion of the subscriptions of industrial and commercial concerns *may* be held up for future contingencies or more directly applied to "capital" purposes, as distinct from being applied on revenue account, that consideration has little force as applied to professional societies. Consequently it is likely that there would normally be a smaller percentage open to rejection by the income tax authorities; seeing that the annual subscriptions are comparatively small it is not a matter for surprise that in many cases local inspectors regard the matter as covered by the maxim *de minimis*. Nevertheless the point is sometimes raised, and a brief statement of what we understand to be the practice may be of some utility. The difficulty of the Lochgelly decision lies in its practical application. It will be realized that the allowable percentage of the subscription depends on matters of some complexity, which can adequately be dealt with only after detailed examination of the accounts of the society. In these circumstances the Board of Inland Revenue — as was explained by official witnesses before the Royal Commission — have entered into "arrangements" with various societies, the essence of which is that the Board agrees to the allowance to the members of their individual subscriptions, and the society acquiesces in assessments made upon itself on the basis of the excess (if any) of its receipts over its expenses so far as these are legitimate for tax purposes. Where such an arrangement is not made the society cannot be assessed for the excess of subscriptions over its expenses because it is not legally assessable, but, on the other hand, each individual member may be called upon to prove what proportion of his subscription is allowable under the Lochgelly decision. The practice in question seems not unreasonable, and was apparently so regarded by the Royal Commission, but where the subscriptions are so small that the non-allowable percentage is already covered by the practice *de minimis* no useful purpose would be served by taking any action to bring any particular society within the "arrangement" provided by the Board of Inland Revenue.

JOHN FERRIAR, M.D.

ALTHOUGH a pioneer in preventive medicine, a most able critic, a poet of no mean parts, an antiquarian, and an essayist, John Ferriar's (1761–1815) name is now little known to members of his profession. His life in the *Dictionary of National Biography*, by a lay hand, deals chiefly with his contributions to general literature, and in a scholarly account of this interesting personality Dr. John Ruhräh[1] of Baltimore remarks that "few physicians to-day who do not lean to literature have ever heard of Ferriar." There is, however, a full account of his life, with much detail about his endeavours to improve the sanitary condition of Manchester in order to prevent the ravages of typhus, in Dr. E. M. Brockbank's *Sketches of the Lives and Work of the Honorary Medical Staff of the Manchester Infirmary*, to which Ferriar was honorary physician from 1790 to 1815, and where a small ward bears his name. Born at Oxnam in Roxburghshire and medically educated at Edinburgh, Ferriar began practice at Stockton-on-Tees in 1782, but three years later he moved to Manchester, and at once became active with his pen; in 1786 he produced papers on "Popular Illusions and more particularly of Modern Demonology," and "On the Dramatic Works of Massinger"; in the following year he turned out no less than five papers dealing with antiquarian, theological, and physiological subjects. In 1788 he published *The Puppet Show, a Didactic Poem*, and his best known work, *Illustrations of Sterne, with other Essays and Verses*, of which Dr. Ruhräh says that "it is easy to read and may be recommended to every lover of Sterne and to every hater of Sterne—there are some such stupid people in the world—so it must give endless satisfaction." In it Sterne's plagiarisms from the old French novelists, Bishop Hall's sermons, and from Burton's *Anatomy of Melancholy*, are incidentally shown up; but Dr. Ruhräh pleads that nearly all great literary lights have done likewise, and that Sterne improved whatever he borrowed, making it sparkle and giving it a worthy setting; so that the reader will appreciate Sterne's version more highly than Burton's

[1] *Ann. Med. History*, New York, 1921, iii, 343–353.

original; and he remarks that Ferriar points out the service thus rendered and he dedicates an appreciative sonnet to "Sterne, for whose sake I plod thro' miry ways." Ferriar's "The Bibliomania, an Epistle to Richard Heber, Esq.," contains many fine lines, and was followed by *The Prince of Angola*, a tragedy. Of his medical works, the most substantial was *Histories and Reflections*, in three volumes (1792, 1795, and 1798), to which a fourth volume was added when a second edition appeared in 1810–13. *An Essay on the Medical Properties of Foxglove*, from his pen, saw the light in 1799, but the best of his professional contributions, one that, to quote Dr. Ruhräh, reads like a novel, or rather like a collection of modern short stories which any mystery magazine could publish with but few changes, is entitled *An Essay towards a Theory of Apparitions*, and appeared in 1815.

ANAPHYLAXIS AND ANAPHYLATOXINS.

AT the meeting of the Royal Society on March 16th Drs. H. H. Dale, F.R.S., and C. H. Kellaway presented a paper dealing with the two main theories put forward to explain anaphylaxis to a soluble foreign protein—namely, the theory of cellular antibody, and that of anaphylatoxin. They produced new evidence in favour of the first theory. A purified, concentrated precipitin for crystallized egg-albumen was prepared, and a control preparation was made of similarly concentrated globulin from normal rabbit's serum. Guinea-pigs were rendered passively anaphylactic to egg-albumen by an injection, two days previously, of the precipitin. Intravenous injection of a further dose of the same precipitin, given a few minutes before a dose of egg-albumen, suppressed the anaphylactic reaction completely; normal rabbit globulin showed no trace of such protective action. Similarly, isolated plain muscle from anaphylactic guinea-pigs, suspended in saline solution, was completely protected from the stimulating effect of egg-albumen by adding to the bath the precipitin which caused the anaphylactic condition; normal globulin had no protective action. The nature of so-called "anaphylatoxins" produced by digesting serum with carbohydrate sols, etc., was examined, and evidence was obtained that their toxicity is due, not to protein cleavage, but to formation of complexes which keep the foreign colloid finely dispersed in the finished product. The anaphylatoxins produce symptoms which are not identical with those of true anaphylactic shock, and do not act on isolated plain muscle as the anaphylactic antigen does, but only exhibit their action in the presence of the circulating blood. Their action is attributed to exposure of the blood to a large foreign surface. One dose of anaphylatoxin renders an animal insensitive to another, but leaves it, if anaphylactic, sensitive to the antigen.

THE RUSSIAN EPIDEMIC MENACE.

A CONFERENCE, called at the instance of Poland by the League of Nations to concert measures to prevent the spread of typhus fever and cholera westward from Russia and the border countries, was opened last week in Warsaw. The *Times* correspondent states that twenty-three countries were represented, including Turkey, Germany, and Soviet Russia. Great Britain was represented by Dr. S. P. James, of the Ministry of Health. Three subcommittees were appointed—one to study the epidemic conditions in Russia and the neighbouring States, another to examine the measures taken or contemplated by the several Governments, and a third to recommend means to prevent the epidemics from spreading westward. It is from Western Russia that the chief peril to the rest of Europe comes, and the Ukrainian Red Cross reports that in the south-west the conditions are terribly bad. Both typhus and typhoid fever, which were prevalent in December, were more widespread in January, and are believed to have increased since. It is expected that under the impulsion of famine the people will endeavour to migrate westward as early in the spring as the roads become passable. As to the interior of Russia, what has already been published from time to time with regard to the condition of medical affairs and the medical profession may be supplemented from a paper recently contributed to the Danish *Ugeskrift for Laeger*, the journal of the Danish Medical Society (February 2nd, 1922), by Dr. J. W. S. Johnsson. He writes of "the systematic extinction of Russian scientists," and bases himself on statistics contained in a journal called *Rul*, published in Berlin. Deaths by execution are, he says, printed in one list and deaths by starvation and disease in another. In *Rul* (No. 283, for October 21st, 1921) the first list contains "only" 22 names, while there are 78 in the second list. It is stated that the gynaecologist, Professor Fenommenow of Petrograd, has died of starvation, Professor Brinno was shot in Kiew by the Bolshevists, and Professor Ott, one of the most notable Russian gynaecologists and the Tzarina's personal medical attendant, has died in the Caucasus in the greatest poverty. It would seem that Kiew was the scene of the worst atrocities and executions, and that Petrograd and Moscow come next. The death of Dr. Farrar from typhus in Moscow last December will be fresh in the minds of readers, and recently Professor Nansen stated that he had lost two of his assistants, the Swedish expedition a nurse, the Quakers two of their men, and the Germans one. He estimates that during the past two years about twenty million Russians have suffered from typhus fever, but as the recorded mortality was only about 1 per cent., either the total is over-estimated or the number of deaths under-estimated. Professor Nansen anticipates a serious outbreak of cholera in the spring, and stated at the beginning of this month that the disease had already broken out in the Ukraine.

PSYCHOLOGY IN INDUSTRY.

A MEETING in support of the newly incorporated National Institute of Industrial Psychology was held at the Mansion House, London, on March 27th. Dr. C. S. Myers, F.R.S., who is retiring in June next from the directorship of the Cambridge Psychological Laboratory in order to act as director of the Institute, submitted a resolution emphasizing the need for applying its methods and aims to the better utilization of the human resources of the nation. Dr. Myers said that the Institute, even thus early in its career, had received the thanks not only of employers but of employed. A system of vocational selection was being recommended to employers, not as a substitute for, but as supplementary to, the ordinary interviews with candidates for posts, and as a means of assigning to each worker the most suitable task. He dwelt upon the growing appreciation of industrial psychology in the United States and in Germany. The latter country, where both employers and trade unions were realizing the value of such guidance, seemed likely in the future to exalt the human factor as much as in the past it had exalted the material. Vocational psychology was like medicine and surgery in that it depended upon both research and practice. He instanced the work of the scientific committee of the Institute, which, among other investigations, had occupied itself with the effect of atmospheric conditions on mental efficiency, the measure of mental weariness by means of changes in the span of apprehension to groups of sounds, the acquirement of motor habits, the intellectual and emotional development of adolescents, the tests of physical fitness and determination of standards (this last under the direction of Professor A. V. Hill), and variations from the normal of pulse and reflexes through fatigue (the work of Dr. B. A. McSwiney). Among those who spoke in support of the resolution—which, of course, was carried—was Viscount Haldane, who said that although the word "psychology" was suspect in many quarters, the sphere of psychology with which the Institute was concerned did not embrace those fascinating studies of the subconscious, such as dream phenomena, but was limited to a very simple method of applying exact observation in industry. The new science of psychology, which was really the application of an old science, came to the assistance of physiology at many points, and he believed that its pursuit would help to break down the common distinction, so often confusing, between brain work and manual work. He hoped to see the labour

of a man conceived as a single thing, not split up into arbitrary divisions which had little correspondence with reality. We may respectfully express the hope that the new psychology will be applied in some way to public speakers, so that they may adjust their voices to acoustic conditions; the noble Viscount's remarks cannot have been heard beyond the small semicircle in front of him, and the hall contained several hundreds of people.

CHEAPER SPAS.

ONE result of the formation of the British Spa Federation appears to be an effort to reduce the cost of visiting British spas. Dr. Fortescue Fox, in a letter published at page 542, makes two points: the one is that British spas have not made arrangements to meet the needs of persons of moderate means. The rich patient can go to an hotel, and at many of the spas there is a hospital, or more than one, for patients whose financial position entitles them to free or assisted treatment. The suggestion is that pensions or hostels should be established for such persons; this would have the double advantage of enabling them to visit the spa without unduly straining their resources and, while there, of being provided with a diet suitable to their state of health. At many foreign spas, especially in Germany and Austria before the war, pensions, with rates adapted to shallow as well as deep purses, were always provided by private enterprise, and there seems no reason why this should not be done in this country. Diet is often, perhaps usually, an important part of the treatment at a spa, and at many foreign spas medical regulations are rigidly enforced. The same is, we fear, not true of most British spas, where a patient may even have difficulty in obtaining in his hotel or pension the diet prescribed by his medical advisers. The other point is as to railway fares; Dr. Fortescue Fox calculates that it may be cheaper to visit a French or Swiss spa than to make the journey from London or the South of England to Scotland. Representations on this head have been made by the British Spa Federation to the railways. In some foreign countries the spas are subsidized by the railways, but in this country the railways seem to be bent on making as much as possible out of patients desiring to travel. The spas embraced in the federation have, we are informed, reduced the prices of mineral water and of various other medical treatments, and steps are being taken to induce hotels and other interests to fall into line with this effort to encourage the use of British spas by British patients. We hope that the railway companies will reconsider their charges and arrangements.

PUBLIC HEALTH TRAINING IN AMERICA.

CONTEMPORANEOUSLY with the revision of training and examination for the Diploma in Public Health in this country, the subject is being discussed in connexion with the medical schools of the United States. A conference of academic authorities was arranged to take place at Washington in the middle of March to discuss the future of public health in the United States and the education of sanitarians. The chief subjects on the programme for discussion on the first day, when Dr. William H. Welch was to be in the chair, were the present state of the education of sanitarians, and some of the newer aspects of public health, such as mental and child hygiene, physical education, and industrial hygiene. The second day was devoted to a consideration of the kind of sanitarians needed for the future and how they can be recruited. On the third day the chief subject was the training of sanitarians. In a circular announcing the conference the Bureau of the Public Health Service of the United States draws attention to the rapid development of the public health movement, the shortage of trained officers, and the inadequate facilities for their education, and states that "there has never been so much interest among people generally in public health"; it is held that with a sufficient supply of trained officers it would be possible "to immeasurably increase the health, efficiency, and happiness of the American people." Last year the American Public Health Association, which includes Canadian members, appointed a committee to consider the standardization of public health training. In its report the pressing need for standardization is demonstrated in two tables containing a list of the universities and schools giving diplomas in public health and indicating the previous training, and the time to be devoted to special study for each. For the highest, that of Doctor of Public Health, when conferred by Yale, Harvard, Johns Hopkins, Columbia, and other schools of high repute, at least two years of special study are required, and the candidates must be graduates in medicine. But there are marked differences, and the Public Health Association's Committee states that the most serious defect in the whole system at present "lies in the fact that certain institutions give not only the certificate in Public Health, but even the doctorate in Public Health for a course of a few weeks, while others require a period of almost three years, and it seems most desirable to effect some form of standardization in this field." One remarkable body, indeed, requires only a thirty-six hours' course, but it is explained, as regards previous training, that there are "no recent data available" for the body in question, which has its headquarters in Chicago; it must be a law to itself, and its degrees are no doubt valued at their real worth. Other diplomas granted by various institutions are Doctor of Philosophy in Public Health, Bachelor of Science in Hygiene or Public Health, Certificate in Public Health (C.P.H.) in Industrial Hygiene, in Nursing, and in quite a number more. Canada has evidently followed the lead of the old country, for its medical schools instead of a Dr.P.H. give a D.P.H., always based on a degree in medicine, though the period of special study appears to be shorter than for some of the doctorates in the States. From the documents before us it is evident that the whole subject is being thoroughly considered. Meantime the Committee recommends *inter alia*, "That the authorities having the appointment of health officials be urged to give preference so far as possible to persons holding degrees or certificates in public health or hygiene."

WE regret to have to record the death of two veteran members of the British Medical Association: Dr. Charles Parsons, formerly of Dover, died at Tunbridge Wells on March 24th; he had reached his 90th year; he was Treasurer of the Association in 1896–98. Dr. W. Ainslie Hollis of Hove died there at the age of 82 on March 26th; he was President of the Association when it held its annual meeting in Brighton in 1913.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

Nurses' Registration.

A DEBATE was raised on March 22nd on the proposed new rules of the General Nursing Council for England and Wales, with special reference to Rules 9*a* and 43 (2). Rule 9*a* provided that the Nursing Council might receive for purposes of registration a certified copy instead of the certificate itself. Major Barnett, who moved an address to His Majesty that the rules should be annulled, said that in order to secure a uniform standard of qualification in all parts of the United Kingdom the Act required the English Council, before making any rules as to the conditions of admission to the register, to consult the Nursing Councils of Scotland and Ireland. The Scottish Council had not been consulted as to this rule; it had written to the English Council asking that the rule should be withdrawn, and, pending the adjustment of the matter, had not passed any rule to allow registration of the English nurses on the Scottish register. Sir Alfred Mond replied that he was acting in accordance with the opinion of his legal adviser, and that the rules were purely a matter of machinery, which did no more than prescribe the evidence which nurses were to produce of their qualifications. He had consulted the Scottish Council on several occasions, and on need would do so again; but it was absurd to suppose that the English Nursing Council and the Minister responsible was incapable of carrying out the Act in England except by the consent of the Scottish Nursing Council. There was what he described as a long feud between two nursing associations. Out of some 50,000 nurses 19,000 were on the register of the College of Nursing; under the rule the Registrar of the English Nursing Council would examine copies of the certificates of the College of Nursing to satisfy himself when an application was made, and the same would be done with the other associations; there would be no favour to anybody.

The reason he was taking this action was that since November, when the register came into existence, 3,235 actual cases had been received and only 984 completed. Applications were coming in at the rate of 800 a month, and less than one-third had been finally passed by the Council. The present Council must, according to the Act, come to an end not later than November 23rd next. Out of 50,000 nurses there were only 1,500 on the register, and unless by November 23rd next a large number were enrolled there would be the absurd position of the election of the Council for three years by quite an inadequate number. It was impossible for the chairman of the Registration Committee to go into long details of every one of these certificates and cross-examine in every case. If he did so, many of the nurses would be dead and buried before they got on the register. The Nursing Council had passed this rule by a majority of 16 to 6. The Matrons Association of Great Britain, representing the matrons of the leading London and provincial hospitals, was entirely in favour of the rules; if they were rejected there would be no other course open for him but to move the repeal of the Act, so doing away with the register altogether.

The debate was continued by Mr. R. Richardson, Mr. Lyle, and Captain Elliot, who said that the broad object of the section of the Act was not being fulfilled by the rules. The prime consideration was that the two registers in Scotland and England should be similar and parallel in all respects, and that object was not being attained. The protests from the Scottish nurses had not come from any one section, but from the body legally set up under the Act.

Major Barnett claimed a division, and his motion was rejected by 64 votes to 49.

Smuggling of Drugs into England.—Replying to Mr. Morris, on March 27th, Mr. Shortt said that information was received from time to time that opium, cocaine, and other drugs were smuggled into this country, or sent through the post from the Continent, and it was known that Chinese seamen and others were addicted to the opium habit, but the police were not aware of any organized traffic. Every effort was made to detect offenders, but short of opening all incoming passengers' luggage, the minute search of every passenger, and the examination of every postal package, it would not be possible to suppress entirely the illicit introduction of drugs into this country as long as it was possible to obtain them without difficulty in other countries. International co operation was essential, and the question was engaging the attention of the League of Nations, which had been entrusted by the treaties of peace with the general supervision of the traffic in opium and other dangerous drugs.

Health Services: South Wales.—Mr. T. A. Lewis asked, on March 27th, whether the report of the South Wales Regional Survey Committee had yet been considered by the Ministry of Health, and whether there was a prospect of any of the recommendations being put into operation. Sir A. Mond said the valuable report of the Committee had been carefully considered, but the present was not an opportune time for adopting special measures for carrying out the recommendations of the Committee.

Medical Establishment, Territorial Armies.—Lieut.-Colonel Fremantle asked, on March 23rd, what would be the total number of officers and of other ranks on the peace and war establishments respectively of the several medical units of the Territorial Army on effect being given to the proposed economies; what would be the peace and war establishments of medical officers on the Headquarters Staff of a Division; and whether it was proposed to give generous compensation to D.A.D.'sM.S. of the Territorial Army on the premature termination of their appointment. Sir L. Worthington-Evans regretted that the details of the establishment were not yet sufficiently settled to enable him to publish them. The Deputy Assistant Directors of Medical Services were given two months' notice of abolition of appointment from March 1st, 1922, and they would continue in receipt of full pay and allowances of the appointment up to April 30th, 1922, inclusive.

The Medical Services for the Air Force.—On report on the Air Estimates, Dr. Murray, on March 23rd, inquired as to the reduction in the items of medical services. The amount for 1921–22 was £141,800. The amount for 1922–23 was less by £58,400. Captain Guest, in reply, said that there was a big reduction in payments to hospitals. In 1921–22 these payments amounted to £132,500, but the estimate for 1922–23 was £73,000. This was largely due to a new system in the Royal Air Force of dealing directly with big civilian hospitals instead of keeping up expensive establishments of its own.

Disability Pensions for Tuberculosis.—Mr. Macpherson informed Mr. Tillett, on March 23rd, that cases of tuberculosis, as of other disabilities, would be considered for final award in accordance with the provision of the Act of 1921 as early as possible. He was advised, however, that each case of tuberculosis must be considered on its merits, and that having regard to the nature of this disease, it would not in all cases be in the best interests of the pensioner to make a final award.

Contagious Disease in Uganda.—Mr. Churchill, in answer to Mr. Hailwood, on March 22nd, said there was no analogy between the Contagious Diseases Acts formerly in force in England and the measures which had been in force in Uganda since 1913 for preserving a population ravaged with venereal disease. The questions whether the procedure in Uganda could be improved in detail, and whether special reference to prostitutes could be deleted from the legislation without relieving that class from the examination considered necessary in the case of the general population would be referred to the Governor. He was satisfied, as was Mr. Harcourt in 1913, as to the need for drastic action in dealing with the matter. The main legislation on the subject was a native law of the kingdom of Baganda, passed by and at the instance of the native government; and the administration was a matter for the native chiefs and not for the British officials, though the Government medical officers gave their services in examining the suspected cases sent to them by the chiefs. Corresponding legislation existed to cover the case of those not subject to the native law.

Treatment Centres for Ex-Service Men in London.—Major Tryon informed Mr. Gilbert, on March 16th, that there are five hospitals and nine special medical clinics maintained by and under the direct control of the Ministry of Pensions within the administrative County of London. These are as follows:

Hospitals:
Church Lane, Tooting.
Ducane Road, Shepherd's Bush.
Lonsdale House, Clapham Park.
Ruskin Park, Denmark Hill.
"Fernbank," Roehampton.

Special Medical Clinics:
Cheltenham Terrace, King's Road, Chelsea.
92, Dalston Lane, Hackney.
St. Paul's Schools, Queen Street, Hammersmith.
12a, Lyndhurst Road, Hampstead.
Regent Street Polytechnic, 14, Langham Place, Regent Street.
6, Hatherly Grove, Paddington.
11, Palace Green, W.1.
The Hut, Morpeth Terrace.
28, Nightingale Place, Woolwich.

In addition, the Ministry is making use of some fifty civil hospitals and treatment centres in London at an agreed charge for each patient. The number at present receiving treatment at these institutions is approximately 21,000. There is no immediate prospect of closing down any of the institutions in the London County area, though that prospect is kept constantly in view.

Illegitimacy Statistics.—At the instance of Mr. G. Murray, Sir Alfred Mond, on March 14th, circulated the following comparative statistics of illegitimacy in various countries:

	1913.		Latest Available Figures.		
	No.	Rate per 10,000 of Total Live Births.	Year.	No.	Rate per 10,000 of Total Live Births.
England and Wales...	37,909	430	1920	44,947	469
Scotland	8 518	709	1920	10,204	747
France	65 558	879	—	—	—
Belgium	10,975	641	—	—	—
Holland	3,591	207	1920	4,112	213
Norway	4,360	714	1917	4,466	699
Sweden...	20,160	1,548	1916	18,126	1,490
Denmark	8,313	1,147	1919	7 170	1 043
Italy	52,219	465	1916	36,884	418

Viewing the Body at Inquests.—On a question by Mr. Rendall as to the Coroners Bill which the Government had undertaken to introduce to replace the temporary law, Mr. Shortt promised that in framing the measure he would consider a proposal to make viewing of the body by the jury at inquests optional except when the coroner held that they should view it. There were, he said, strong reasons why the body should be viewed by the coroner, but the whole question would be carefully considered.

Medical Treatment of School Children.—In the debate on the Consolidated Fund Bill, on March 28th, Mr. Fisher warmly repudiated a suggestion from the Labour benches that the Education Act of 1910 was a dead letter; only three of the clauses in that measure had not been brought into operation. He referred with especial pleasure to the medical treatment of children, and claimed that there had been a great increase in efficiency.

Accidents in Factories and Workshops: Remarkable Statistics.—Sir John Baird, on March 28th, corrected an interrogative assertion by Lord Henry Cavendish-Bentinck that the number of preventable accidents in factories and workshops during the year 1920 had increased by 12,750 over the number for the previous year. The figures referred, he said, to the increase in the number of reported accidents, and it was doubtful how far this number represented an actual increase. The number reported for 1919 was surprisingly low having regard to the trade activity of that year, and there was reason to think that there had been great laxity in reporting accidents during that period. The number of accidents fluctuated considerably from year to year according to trade activity and other circumstances, and an increase in one year might be followed by a corresponding or greater reduction in the following. This is what had actually happened in 1921: the rise of 12,750 in 1920 had been followed by a fall—due, no doubt, partly to trade depression—of over 46,000. The Factory Department was not relaxing in any degree its efforts to improve safety conditions in factories.

Answers in Brief.

The Minister of Health has stated that statistics of the number of persons who registered their names with a doctor under the Insurance Acts but did not have recourse to his services in case of illness were not available, but there was no reason to suppose that the percentage was considerable.

Several questions have been addressed recently to the Minister of Health with regard to legislation for the control of milk. Sir Alfred Mond, while expressing his appreciation of the importance of purer milk, has stated that it was equally important to avoid action tending to decrease the production of milk and increase its price to the consumer.

PROFESSIONAL SECRECY.

RESUMED DISCUSSION IN THE MEDICO-LEGAL SOCIETY.

THE discussion in the Medico-Legal Society on "Professional secrecy," which was opened on March 21st and adjourned, was resumed on March 28th, when Lord Justice ATKIN again presided over a large attendance. The report of the first part of the discussion, including Lord Dawson's opening speech, appeared in the BRITISH MEDICAL JOURNAL of March 25th (page 494).

Sir LENTHAL CHEATLE raised the question of typhoid carriers and diphtheria carriers, and urged that the State, by requiring the notification of certain infectious diseases, had absolved the doctor from his professional secrecy in these respects. Doctors and midwives also were required to notify gonorrhoeal ophthalmia. He hoped that any legislation which was proposed for giving the doctor a certain amount of privilege would not embarrass the more perfect control of public health.

Dr. R. LANGDON-DOWN thought that the two recent rulings of the court to which Lord Dawson had drawn attention—one in which the director of a venereal clinic was required to disclose, and the other in which a doctor had to produce evidence of notification of birth—although they raised points to which objection might be taken on other grounds, had not been shown to have any bearing on the principle which was to govern disclosure of medical secrets, and they afforded no evidence that the measure of privilege accorded in practice had been cut down. If they agreed with Lord Dawson that there was a limit to the obligation of professional secrecy, then the public should be made fully and clearly aware of this, so that medical men should not be open to the charge of dishonourable conduct when it became their duty to disclose. If they allowed the public to think that confidence was absolute, the public would be rightly aggrieved when it had to be admitted that confidence was limited, and the doctor had to give evidence. No proof had been forthcoming that the requirement of professional disclosure, which had operated for 150 years, had had any effect in sapping the confidence of patients in medical men. Would it not be possible to formulate some principles to govern the limitations as to secrecy? The first, in his view, should be that the rule of secrecy must be departed from in order to prevent injury—which he took to cover injustice of a grave nature—to the patient, other persons, or the State. If the threatened injury was direct or immediate it might justify spontaneous action by the doctor *a fortiori* under legal order. When the threatened injury was remote, contingent, or indirect, departure from the rule could only take place, if at all, in obedience to the law, whether embodied in Act of Parliament or the direction of the court. Generally speaking, if the principle of limitation of secrecy was conceded it seemed to him that the judge was the proper person to decide: the judge stood between the parties, he represented the community, he knew best the reasons for which the evidence was required, and he was a member of the public and a potential patient and litigant.

Dr. MACKEITH was against the disclosure of anything whatever. The secrecy of the doctor should be as absolute as that of the lawyer. When it was stated in the Ministry of Health regulations that the secrets of the venereal clinic would not be disclosed, surely a doctor might be legally, as well as morally, justified in disobeying the order of one of His Majesty's judges. As for concealment of birth, it was not necessary for the carrying out of justice that the doctor should notify birth. The ends of justice were not defeated through the doctor not notifying. As for infectious disease, he maintained that it was the patient's duty, not the doctor's, to notify; let the legal onus be laid upon the patient.

Sir ROBERT ARMSTRONG-JONES said that his sympathies naturally were with medical men in contending for privilege, but he confessed that as a citizen he could not view with approval any immunity conferred upon an individual or a class. Ever since the Reformation it had been the tendency to abolish such privilege. Aristotle laid down the maxim that the State must come before the individual. The true guidance in this matter was one's moral sense, which was decided by the appeal to the intellect and reason, not by authority, or sympathy, or custom. On purely ethical grounds, considering his duty to the State, he found himself unable to support the argument so forcibly brought forward by Lord Dawson.

Sir WILLIAM COLLINS said that he went with Lord Dawson to some extent. The relation between a medical man and his patient was a very special one. It included a bodily examination, possibly an inquiry into the mental condition, and possibly also something of moral history. The relationship might be so special and so confidential as almost to be akin to that of the priest. In other respects, however, the medical man could not be compared with the priest or with the lawyer. The medical man was a skilled observer of facts as well as a receiver of communications. He could give evidence as to a wound, a scar, a disease, or an abortion. Therefore the question arose as to when it was the duty of the medical man to communicate information. There was no easy formula which fitted the case. He could not agree with the candidate for the martyr's crown (Dr. MacKeith), nor could he adopt the ethical argument of Sir Robert Armstrong-Jones. He had to come down to a lower plane, and to ask whether some measure of privilege ought not to be conceded. The duty of the medical man with regard to communication varied greatly with different cases. Sometimes, as in a case of malignant disease, it was his duty not to communicate the result of his observation to the patient himself, but to communicate it to the patient's friends; at others, as in venereal disease, it was his duty emphatically to communicate it to the patient himself. The relationships of guardian and minor, wife and husband, fiancé and fiancée, involved special considerations. With regard to criminal abortion, he recalled the case of Kitson *v.* Playfair, in which Lord Brampton asked a medical witness whether he conceived it his duty to communicate with the authorities, and on the witness saying that he did Lord Brampton said that he did not take that view at all, and if it were so he would be very careful in his selection of a medical adviser. Lord Brampton seemed to imply that there was a good deal of discretion under the common law. The speaker applauded the late Dr. Elliott of Chester for his resistance to Mr. Justice Horridge, but would have applauded him more had he carried his resistance further.

The President's Summing-up.

Lord Justice ATKIN said that anyone who had heard the discussion must be satisfied that this was a very important and living problem, and that there were a number of high-minded professional men who felt acutely the conflict which was raised between their duty as citizens and their professional duty to their patients. There was no doubt that most—he would say all—medical men interested in this question were also keenly alive to the interests of public health. They felt that it might very well be that an unwarranted disclosure of professional secrets might be detrimental to the public health, inasmuch as it would deter patients either from consulting the doctor or, when consulting him, from making that full disclosure which was necessary. This was not in any way an issue between medical men and lawyers, and it was most unfortunate in the interests of the solution which was sought for by the medical profession that it should be put forward in that sense. The lawyer's point of view was solely the administration of justice. The privilege which many years ago was conceded to lawyers, not by statute, but by a development of the common law, probably through the action of judges, was granted because it was considered essential in the interests of justice that clients should communicate perfectly freely with their legal advisers. It was from the same point of view—that of public good—that this other matter must eventually be decided, not by doctors or lawyers, but by the public at large. The question to be decided by the legislature—which, though it contained many lawyers and some doctors, was for the most part composed of patients!—would be whether it was for the public good that privilege should be granted, restricted, or refused. Unrestricted privilege, he believed, was not a practical proposition. At present, in the theory of the law, no privilege at all was granted to the medical man, and in order to alter that position an Act of Parliament would have to be obtained. Therefore any proposals would have to meet with the approval of the legislature, and the last thing that could be obtained from the legislature was an absolute privilege. Absolute privilege meant that if a person was on trial for his life, and on the point of conviction, and a doctor, through information which had come to him professionally, knew that that person was not guilty, but that another person was, that other person being his patient, it would still be the doctor's duty to abstain from giving information. He did not think that even Dr. MacKeith would go as far as that. Even outside the criminal law there were many cases scarcely less crucial. The question often arose in divorce court proceedings. It was

the modern fashion sometimes to regard these cases lightly, but some of them involved most serious issues to the reputation of parties, and in the case of many women it was as important as a question of life or death. It might conceivably be for the public good that the innocent wife or husband should be condemned because the doctor who knew the secret had been obliged by his patient not to tell, but it did seem a serious matter that a doctor should sell his freedom and discretion and honour for a fee. His lordship was not prepared to accept the distinction of Lord Dawson that while a doctor might reveal a professional secret to vindicate an individual, he was not to do it in order to vindicate the law. That distinction would not stand examination. It meant that in certain cases a doctor might give evidence for the defence but not for the prosecution, and that might have very grave results. There were many issues which arose in other cases, such as insurance claims and actions for damages, fraudulent or non-fraudulent. Was it necessary for the public advantage that a doctor should stand by and that injustice should be done?

As a matter of fact (Sir Richard Atkin continued) there were very few cases in which a doctor was ever called upon to give evidence on subpoena against his will. The doctor was often called upon to state facts in divorce cases, but he had never known a case such as Lord Dawson visualized in which cross-examining counsel extracted from a doctor what a patient had told him with regard to his past life. He had never known a counsel do this, for it would be risky for the counsel's case; and he could hardly conceive of the judge who, if such questions were raised, would not use his power to prevent any improper line of cross-examination being persisted in. In practice that kind of question, as to what communications had been made by the patient, was never asked, and certainly in his own experience had never been enforced. He concluded by saying that if Lord Dawson's proposals took shape the conditions under which privilege was to be granted would have to be very carefully framed, and it would be a good thing to have a careful consideration of the issues by people representing all the different interests. Some very difficult cases would have to be provided for. A severe test of privilege, he supposed, would be a case in which a patient brought an action for negligence against a doctor in which another doctor would be a material witness. He thought that some distinction would have to be drawn in cases of alleged malpraxis. The suggestion might be that where the patient made his bodily health one of the issues in the action, the doctors should be relieved from the burden of privilege, for it was conceded on all sides that the privilege really belonged to the patient, not to the doctor. He would only add one other word, a grave one—that it would be very unfortunate at this time of all times if anything were interposed, except on grave public grounds, which tended to make light of or to hinder in any way the administration of law and order.

Lord Dawson's Reply.

Lord DAWSON said that many of the criticisms made on the last occasion and on the present were irrelevant; some speakers who thought they were opposing him were in reality only uttering his own views. They were all agreed that the one object to be pursued was the advantage of the public, but he could not agree with the proposition that the ends of the law were at all times the only consideration. The medical profession depended very largely upon the confidence people had in those who practised it. Until recently the public believed vaguely that anything which was told the doctor was secret, but that belief had been upset by recent rulings. The general confidence of the public was essential if the medical profession was to work for the public good. Therefore he repeated a remark which had been challenged in the discussion, that it was better for justice occasionally to fail than for the care of the sick to be prejudiced always. When once the principle of a measure of privilege was conceded he would admit that the difficulties of definition would be very great. He would not mind the matter being left to the judge if the judge was in the position of knowing what the doctor's objection was; it would be different if the judge would adjourn the court and go into chambers and elicit the reasons which actuated the doctor, but naturally the judge desired to get through the business of his court. He wished heartily to endorse the forcible and eloquent remarks of the learned chairman, but he would point out that the cause of law and order was furthered by removing anything which strained the process of justice.

England and Wales.

COMBINED APPEAL FOR THE LONDON HOSPITALS.

As was foreshadowed recently in our columns, the King Edward's Hospital Fund for London has undertaken the organization of an appeal on behalf of the voluntary hospitals of London, with the aid of the Hospital Saturday Fund, the Joint Council of the Order of St. John and the British Red Cross Society, the League of Mercy, the London Regional Committee of the British Hospitals Association, the Metropolitan Hospital Sunday Fund, and the hospitals themselves. The Prince of Wales has approved of his name, as President of the King's Fund, being used in connexion with the appeal, and an organizing committee has been set up under the chairmanship of Sir Alan Anderson, K.B.E. (chairman of the revenue committee of the King's Fund). Sir George Lawson Johnston, K.B.E. (member of council of the King's Fund), is chairman of the executive committee, with Mr. E. S. Shrapnell-Smith, C.B.E., as director-general of the appeal campaign, and Captain E. J. C. Chapman, M.C., as his deputy. Offices have been secured at 19, Berkeley Street, W. 1, to which address all communications relating to the appeal should be sent. It is to be hoped that this appeal will prove as successful as it deserves to be, for the future of the voluntary system of hospitals in London will be greatly affected by its success or failure. It aims at raising at least £500,000 needed to pay off the floating debt of the London hospitals. Its second object is to secure for the hospitals new subscribers and an additional permanent income to meet the increased cost of working, including moderate continuous contributions from all classes as recommended by Lord Cave's Committee.

MIDHURST SANATORIUM.

This sanatorium was founded by His Majesty King Edward VII in 1903 with funds provided by the late Sir Ernest Cassel, part of which were reserved for endowment. It was built expressly for educated persons of limited means who are suffering from pulmonary tuberculosis in an early stage. The council of the institution state that they have reason for believing that there are many individuals in the above class who do not avail themselves of the benefits of the institution because their medical advisers are not aware of the unique advantages which it presents; and they are very anxious to enlist the co-operation of such practitioners, whose knowledge of their patients will enable them to select the persons socially as well as physically suitable for admission. The position of the sanatorium, at an altitude of 494 feet and on sandy soil, with sunny exposure and protection from winds, in one of the loveliest parts of Sussex, is ideal. The buildings are very fine, with large gardens, recreation grounds, and a chapel. The medical and nursing equipment is thoroughly organized and efficient, consisting of a medical superintendent, two assistant medical officers, a pathologist, and a visiting dental surgeon, and the institution is supervised and visited at least monthly by a consulting staff of physicians. A report of the condition of each patient on admission and discharge is sent to the medical man concerned in the case, who also receives the annual report of the work of the institution. The inclusive charge for maintenance and treatment is at present 4½ guineas weekly, and the number of beds is 104. Further information may be obtained from the medical superintendent of the sanatorium.

ANCOATS HOSPITAL, MANCHESTER.

The annual report of Ancoats Hospital, Manchester, for 1921 states that the total income for the year for the hospital and convalescent home was £24,621, an increase of £2,953. The expenditure of the hospital and convalescent home was £26,968, against £28,008 in the previous year. Annual subscriptions increased by £238, and the workpeople's contributions by £367. During the year there had been 2,194 in-patients, 9,122 out-patients, and 17,361 accident cases, and 2,004 operations were performed. The number of treatments given in the massage department was 16,382, and 13,498 cases attended the venereal clinic under the Ministry of Health scheme. The death was reported during the year of Dr. P. Tytler, who had held the post of honorary surgeon from 1876 to 1915, when he was appointed honorary consulting surgeon. It is hoped that the nurses' home, begun in June, 1920, will be ready for occupation during the summer.

Scotland.

MEDICAL MEN AND ALCOHOL.

THE members of the Glasgow Medical Lunch Club, at the usual weekly meeting on March 23rd, enjoyed an address from Dr. W. L. Reid, who was present as the guest of honour. He chose as his subject the attitude of medical men to alcohol and its place in medical treatment. Dr. Reid has for many years taken a prominent part in discussions on this topic, to the study of which he has devoted much time. His own position was that while he had no belief in alcohol as a beverage or a food, he strongly believed in its efficacy as a medicine under certain circumstances. In view of the widespread abuse of alcohol resulting in crime and disease the general public were more and more looking to the family medical practitioner for advice. Such advice should be carefully considered, as its effects might be far-reaching. The careless prescribing of alcohol had led to the development of the habit in patients. Further, if alcohol is to be given the doctor should naturally choose the purest and most reliable form of the drug, which was that supplied to druggists for medicinal purposes—namely, rectified spirit. His own practice had been that so far as possible alcohol should be prescribed without the knowledge of the patient, and rectified spirit was the most suitable form, as it could be given with something which helped its action and at the same time disguised its taste. He was particularly strong on the bad effects of medicated wines in developing alcoholic habits. These much advertised wines in most cases contained 15 to 20 per cent. of alcohol, and he had known patients who had been advised to use these for tonic purposes develop the habit of their use, while starving themselves of proper nourishing food. Such patients would scorn the idea of becoming addicted to the use of alcohol in the form of whisky or brandy. He finished with a strong appeal to the profession to exercise more care when prescribing alcohol in any form, particularly with regard to its purity and strength and the exact dosage. He agreed with the opinion expressed by a London surgeon that to give alcohol safely required more medical skill than to administer chloroform.

MURRAY'S ROYAL ASYLUM, PERTH.

The report for 1921 by the physician-superintendent, Dr. W. D. Chambers, of the James Murray's Royal Asylum, Perth, states that the number on the registers on March 31st, 1921, was 153, of whom 147 were resident; the total number of cases under treatment during the year was 205. Of the males 47.6 per cent., and of the females 30.7 per cent., entered voluntarily for treatment. Forty-one patients were discharged or transferred to other institutions during the year. Although in only 6 cases was recovery regarded as consolidated, in 17 others so much improvement had taken place that they could suitably be placed under private care. Of the 17 who were discharged as unimproved, 7 were sent to other institutions. In a considerable number of cases mental stress and worry were assigned as the cause of the illness. In very many of these cases it was found, on close examination, that the worry was groundless. It is, Dr. Chambers says, now generally admitted that alcoholic excess, which some years ago was regarded as a cause of insanity, is much more commonly a symptom; the same is, he considers, true of most cases of worry, anxiety, sleeplessness, or overwork; war experience showed that the moderately healthy man can withstand excessive and protracted mental and physical strain without permanent harm. Such conditions may, undoubtedly, produce a state of exhaustion which may lead to a breakdown, but it should be realized that in the great majority these conditions are indications that the danger-point is already passed and that a state of mental disease is already in being. Patients brought under treatment at this stage have an incomparably greater chance of a perfect recovery than those who delay till definite psychotic symptoms develop.

LARBERT INSTITUTION.

At the annual meeting of subscribers of the Royal Scottish National Institution for Mental Deficients at Larbert Dr. R. D. Clarkson, in submitting his report, stated that the number of cases now in the institution numbered over 500, which was as large as could properly be accommodated in the present buildings. The institution was by far the largest of the kind in Scotland, but it fell short of meeting the need. The directors were distressed to have to refuse to admit many cases because there was no room for them. The waiting list had now 120 names on it, and that would be doubled if the education authorities and parish councils knew that there was any prospect of early admission. The pressure to get children admitted was due to an increased knowledge and a growth of interest among the general public in the subject of mental defect. The Duchess of Atholl moved a resolution that the meeting, while acknowledging the benefits derived by so many through the care and training provided by the institution, recognized the urgent necessity for adequate provision for the mentally defective, and in seeking to extend the benefits of the institution commended it anew to the Scottish people as deserving of their generous support. She went on to say that the institution provided a wonderful variety of occupation for the children, and the inspired intelligence directing the whole work was obvious everywhere. It had been estimated that from 1/2 to 1 per cent. of the child population of Scotland was mentally deficient, and when it was remembered that the age to which the State required mentally deficient children to be cared for was 16 that 1/2 per cent. worked out at 7,000 to 8,000 children, while she understood that the number being treated at special schools or institutions was only between 3,000 and 4,000.

GLASGOW SAMARITAN HOSPITAL.

At the annual meeting of the Glasgow Royal Samaritan Hospital for Women, at which Lady Stirling-Maxwell presided, the secretary, Mrs. Christie, said that during the year 1,755 patients had been treated in the hospital, and 2,130 at the outdoor dispensary. Dr. David Shannon stated that the work of the hospital was increasing every year, and the staff were glad that the hospital was about to be increased in size and twenty beds added. The Samaritan Hospital was one of the biggest hospitals of the kind in the kingdom, and to it came many students and graduates, not only from Scotland but from other countries. Every year the number of these students was becoming greater, and the hospital ought to become a big teaching centre. Mr. Thomas Macquaker, the treasurer of the hospital, said that the sum required to meet all the hospital extensions would be in the neighbourhood of £30,000. Of that sum some £8,000 or £9,000 would be spent on the new dispensary which was now being built, and the rest of the money would be required in connexion with the alteration and reconstruction of the operating theatres, and in adding at least twenty beds to one of the wings of the hospital. The Ladies' Auxiliary Association had given the funds required a good start with £2,400, and the directors had between £4,000 and £5,000 more. They would be able to build the dispensary with the sums they had in hand and in prospect, and he was confident that the remainder necessary would be raised.

GLASGOW ROYAL MATERNITY HOSPITAL.

At the annual meeting of the Glasgow Royal Maternity and Women's Hospital the treasurer remarked on the improvement in the finances of the hospital, the income having increased by £4,500 as compared with the previous year. The net result was that there was a deficit for the year of £3,906, to which had to be added the bank overdraft from the previous year of £13,353. They had been able to meet that from legacies and a special appeal, and were left with a surplus of £2,381, of which £1,026 belonged to the staff fund. They had only been able to get out of their difficulties by making a special appeal, and such appeals could not be multiplied. The Lord Provost said that he could not speak too highly of the work performed by the Maternity Hospital; he was glad to learn that cases dealt with in the hospital were followed up, and that every assistance was rendered to the mothers, by advice or otherwise, in bringing up their children. In 1907, the last year of the old hospital, there were 868 in-patients, but in 1921 there had been 3,625. The number of out-patients, however, was less than in 1907, the reason being the introduction of maternity benefit under the Insurance Act.

EDINBURGH HOSPITAL FOR WOMEN.

The financial difficulties of voluntary hospitals and the medical training of women students were subjects referred to at the annual meeting of the Edinburgh Hospital and Dispensary for Women and Children and the Hospice, held on March 21st. The report stated that last year the hospital

expenditure exceeded the receipts by £1,878. The expenditure of Bruntsfield Hospital showed an increase of £4,947 over that for 1913. During the year 571 patients were admitted to the hospital, including 77 children; and 354 confinements were attended from the Hospice. In moving the adoption of the report, commenting on the increase in the number of cases treated in the venereal diseases department, Mrs. Hunter said there was a distinct reaction against women doctors in Scotland at the present time. She was sure the younger women had thought they would not have so much fighting to do to secure their positions. Recently the London Hospital had intimated that no more women students could be admitted. In Glasgow, as far as they could see, there was not the least prospect of any more women getting on the teaching staff of a hospital. The only way was for women to have hospitals of their own. Regarding the remark about the reaction against women doctors in Scotland it might be mentioned that recently there were twenty-five applicants, of whom twenty-three were women, for a vacancy in a provincial hospital for a house-surgeon.

MEMORIAL TO DR. ELSIE INGLIS.

A memorial tablet to the late Dr. Elsie Inglis was unveiled in St. Giles's Cathedral, Edinburgh, on March 21st, by Dr. Mary Scharlieb, C.B.E. The inscription on the lower panel is as follows: "To the beloved and honoured memory of Elsie Maud Inglis, surgeon, philanthropist, founder in 1914 of the Scottish Women's Hospitals for Service with the Allies in France, Serbia, and Russia. Born 1864. Died on active service 1917. *Mors janua vitae.*"

Correspondence.

A NATIONAL COUNCIL FOR MENTAL HYGIENE.

SIR,—There can be little doubt that the subject of mental health, using the term in its widest sense, excites the interest both of the public and of the medical profession more now than it has ever done before. The recent establishment of a few hospitals and clinics for the treatment of "functional nervous disorders," which might be more scientifically labelled "minor disorders of the mind," affords evidence of the fact that the early recognition and treatment of these maladies is generally regarded as a matter of importance in relation to the health of the community. There are, moreover, many societies and associations, old and young, which are engaged in promoting the study of mental disorders, the welfare of the insane, the problems of industrial psychology, and the various aspects of mental deficiency.

A provisional committee of medical men, of which I have been appointed chairman, has decided to form a central organization, a National Council for Mental Hygiene, in order that the work of these institutions and societies shall be encouraged to expand and to add to their usefulness by organized co-operation. Such a National Council for Mental Hygiene will be concerned with other matters which have not yet received sufficient attention. It will help to establish psychological clinics at general hospitals for the treatment of early mental and nervous disorders. It will endeavour to make mental hygiene a more prominent subject in the education of medical students and, by instructing the public in the principles underlying mental health and illness, gradually diminish the enormous waste of time and energy in all classes of society which now results from widespread ignorance concerning these questions.

The conservation of mental health is a matter of serious economic importance to any nation, and this has been fully recognized in other countries, notably in America, where a National Committee for Mental Hygiene has been doing valuable work for a number of years. The chief purposes of that Committee are to work for the conservation of mental health; to promote the study of mental disorders, mental defects, and delinquency in all their forms and relations; to obtain and disseminate reliable data concerning them; to help to raise the standard of care and treatment; and to co-ordinate existing agencies—federal, State, and local.

These are ambitious schemes; but even a moderate amount of success would spell happiness and prosperity to many thousands of the population who must otherwise fail in the struggle for existence. Great Britain must not be less ambitious, and must be prepared to join with other nations in an International League, the objects of which will be to spread the knowledge accumulated by each of its members in all matters of mental hygiene.

The provisional committee consists of: Sir Norman Moore, President of the Royal College of Physicians; Sir Charles Sherrington, President of the Royal Society; Sir John Goodwin, Director-General of the Army Medical Service; Sir George Newman, Principal Medical Officer, Ministry of Health; Sir Walter Fletcher, F.R.S., Secretary of the Medical Research Council; Dr. C. H. Bond, President of the British Medico-Psychological Association; Dr. Bedford Pierce, President of the Section of Psychiatry of the Royal Society of Medicine; Professor George Robertson, President-elect of the British Medico-Psychological Association; Dr. C. S. Myers, F.R.S., Director of the National Institute of Industrial Psychology; Dr. G. Ainsworth; Dr. Helen Boyle; Dr. Edwin Bramwell; Dr. Farquhar Buzzard; Sir Maurice Craig; Lord Dawson of Penn; Sir Bryan Donkin; Dr. Elliot Smith, F.R.S.; Dr. Edwin Goodall; Dr. Henry Head, F.R.S.; Dr. Crichton Miller; Sir Frederick Mott, F.R.S.; Dr. W. H. R. Rivers, F.R.S.; Sir Humphry Rolleston; Dr. T. A. Ross; Dr. Tredgold; Dr. W. Worth.

This committee will call a general meeting on May 4th, 1922, at the rooms of the Royal Society of Medicine, for the purpose of deciding on the constitution of the National Council, of electing officers, and other business. Meanwhile the honorary secretary will be glad to receive the names of all persons, lay or medical, who are interested in this movement and who would care to have more particulars sent to them. Communications should be addressed to the Honorary Secretary, National Council for Mental Hygiene, 51, Green Street, W.1.—I am, etc.,

March 27th. COURTAULD THOMSON.

REDUCTION OF MEDICAL FEES.

SIR,—At the time that the cost of living was at high-water mark or thereabouts I think I am right in saying that the Council of the British Medical Association recommended the profession to increase their fees by 50 per cent., and this, I believe, was generally done. Considering the financial crisis the country is now passing through and the reduced incomes of our patients, together with the somewhat reduced cost of living, I would like to suggest that the Council should again consider the advisability of recommending now a reduction of that 50 per cent. increase by, say, 20 or 25 per cent.

It is a well-known fact that throughout the country there is a feeling, owing to various causes, of antagonism to the profession, and I am convinced that no greater move to reduce that antagonism could be adopted than a spontaneous and voluntary reduction of the increase of fees which was adopted when the cost of living was so high and which was then quite justifiable.—I am, etc.,

Woldingham, Surrey, March 21st. W. McD. ELLIS, M.D.

RESTRICTION OF INFLUENZA EPIDEMICS IN SCHOOLS.

SIR,—Influenza in a school is so serious a matter that I turned with interest to the article in your issue of March 18th by Dr. A. I. Simey and Dr. J. W. H. Eyre, entitled: "The restriction of influenza epidemics in schools by the use of local prophylactic vaccines." What Rugby does is of some importance, and, if I may say so, what Professor Eyre writes is of some importance. Yet I do not remember to have encountered figures in any published work which were more at variance with the conclusions drawn from them.

Three separate attempts were made by vaccination to avoid or mitigate the epidemic. A request was issued that boys should be vaccinated in the holidays. Of 570 boarders 123 complied. The remainder came back "uninoculated and susceptible." Although the authors do not analyse their figures from this point of view, it is clear from other statements that of those vaccinated at home 42 per cent. suffered, of those not vaccinated at home 43 per cent., despite the fact that many of these later received vaccination at school.

In the third week of the epidemic a stock vaccine was given at school to nearly all those who had not been vaccinated at home or who had not already sickened. Fifty boys received only the stock vaccine; 84 per cent. were infected.

Apparently the home inoculation was without result, and the stock vaccine according to the authors doubled the risk. A third vaccine was administered to an unspecified number of

boys. This autogenous vaccine was given in the fifth week of the epidemic, when the incidence was rapidly declining and when approximately four-fifths of the whole epidemic was over. Although no figures are given to support the contention, and the total number of boys who received the vaccine is not even mentioned, it is to be presumed, in view of the demonstrable failure of the other two attempts, that it is for this autogenous vaccine that success is claimed. We are told that 81 per cent. of those who received no inoculation were infected, of those who received one or more inoculations 27.9 per cent. Will it be believed that to produce these figures the total under the head of uninoculated is swelled by all those who contracted the disease during the height of the epidemic before the school inoculations began? The autogenous vaccine was given too late for conclusions of any value to be drawn. Why, if the authors had waited another week or two, on this plan of reckoning, a point might be reached when the uninoculated—that is, all those who had had the disease—would show 100 per cent. incidence, the inoculated complete immunity. The vaccine was given, not at the conclusion of the epidemic, but after approximately four-fifths of it was over.

It is a pity that the figures should have been presented in the way they are, because Dr. Simey and Professor Eyre must have the facts in a form which, had they been properly presented, would have enabled some conclusion to be drawn. Thus for the first fortnight the effect of the home vaccine might be demonstrated by comparing the percentage of cases among those who had received it and those who had not. Apparently in the third week of term all or nearly all received the stock vaccine, so that no controls were available. In the case of the autogenous vaccine, however, a proportion may not have been inoculated. The only figures of value would be the incidence after the fifth week in those who had received the autogenous vaccine and those who had not, and to the total who sickened among the uninoculated there should not be added the relatively vast number who had contracted the disease before inoculation was carried out.

But it must be conceded that the authors are strictly consistent. When their peculiar methods of statistical inquiry tell against them they do not quail. Thus they regard the effect of the stock vaccine as raising the case incidence to the appalling height of 84 per cent. Of course it did nothing of the sort. A number of boys, apparently about 300, were given the stock vaccine. In the next fortnight 42 of these sickened. At this point all but 8 of the remainder were given a second autogenous vaccine and are thereupon removed by the authors from the category of the unvaccinated. Since 42+8 received only the stock vaccine and 42 had influenza, the incidence, they say, was 84 per cent. This, we are gravely assured, "represents the well-known fact that susceptibility to infection is temporarily increased by the first of two such inoculations." It represents nothing of the sort. If all who had not already sickened, instead of all but 8, had been given the second vaccine the incidence among those who received the first stock vaccine only would have been 100 per cent.

I write at length because I fear that the figures given, or rather the quite unwarranted deductions from them, may become known to schoolmasters and others. In a few years' time they may even be quoted with confidence as "The Rugby Statistics" showing an 81 per cent. incidence among the uninoculated.—I am, etc.,

London, March 23rd. H. CHARLES CAMERON.

SIR,—In their article on the restriction of influenza epidemics by the use of "local" prophylactic vaccines (BRITISH MEDICAL JOURNAL, March 18th) Drs. A. I. Simey and J. W. H. Eyre describe their efforts to prevent and control an epidemic of influenza at Rugby School. Although they do not state definite conclusions, it is obvious that they consider that the vaccines they used were of prophylactic value.

To my mind, however, their evidence is wholly inconclusive. The curves represent the number of cases under treatment, but a single curve showing the daily incidence of new cases would be of greater value, for it would exclude the influence of the duration of illness, as foreign to the present investigation.

An examination of a curve obtained by combining the two given shows that the average daily increase or decrease in the number of cases under treatment was approximately:

	Increase.		Decrease.
First week	2	Fifth week	10
Second week	7	Sixth week	4
Third week	12	Seventh week	2
Fourth week	1		

The daily rate of increase in the number of patients under treatment was at its greatest (21) on February 3rd (that is, the curve was then at its steepest). This was the date of the first inoculation. But the maximum daily increase in the incidence rate must have been several days earlier, so that the first inoculation was given after the incidence curve had begun to lose its steepness.

The number of patients under treatment reached its maximum on February 12th (in the middle of the fourth week of the epidemic). During the fifth week the number of patients was falling rapidly (ten a day). The incidence rate must have been falling some days earlier. It was during this week that the second (local) vaccine was given.

We may therefore conclude that the first inoculation was given when the curve of incidence had passed its steepest inclination, and that the second inoculation was given when the disease was already declining rapidly.

Compared with that of an ordinary epidemic, the curve does not appear to be appreciably modified by the inoculations. With regard to the statistics:

1. Of the 123 boys comprised in Class (*b*) (boys inoculated at home) 52 became infected—a case incidence of 42 per cent. Of the 442 boys who were not inoculated at home 191 contracted influenza—an incidence of 43 per cent. The home inoculations, therefore, had no significant effect.

2. Why did not the boys of Class (*d*) receive a second (local) dose? Obviously, in nearly every case, because they contracted influenza during the intervening period. The 84 per cent. incidence is misleading. In all, 282 received the first dose, of whom 61 became infected (incidence 22 per cent.), most of them while the disease was at its height. There is here no evidence that susceptibility is temporarily increased by inoculation.

3. Class (*a*) had resisted the epidemic, now on the decline, for four and a half weeks when the second inoculation was given. They were picked cases, and the disease was dying a natural death. In general I can find no evidence that any of the inoculations affected the course of the epidemic.

The only (conjectural) positive inference to be extracted from the chart is that the sanatorium of Rugby School normally contains about 45 beds, capable of increase to 72 in emergency.—I am, etc.,

Chingford, March 19th. E. BILLING, M.R.C.S.

PROSTATIC ENLARGEMENT.

SIR,—The Hunterian lecture by Professor Kenneth Walker is of very great interest. The possibility of a relationship between enlargement of the prostate and some change in the endocrine system, so ably put forward by him, is at present surely too problematic to form the basis of treatment by organotherapy, and especially since it is extremely difficult in these cases to estimate the reaction to treatment.

The enlargement of the prostate may remain latent for years, and the first sign may be a sudden attack of retention, which may be followed by acute renal failure. When once symptoms have appeared they are generally progressive, but periods of improvement and intermission are common apart from any treatment. Our present method of estimating the degree of enlargement—namely, by cystoscopic and rectal examination—is not sufficiently accurate to allow of the expression of a definite opinion on its progress. In addition it seems that the enlargement may vary in size from time to time, and this, I think, is dependent upon the amount of congestion and possibly upon some relation to the sexual cycle. In the circumstances it is by no means easy to know whether an improvement can be attributed to treatment.

The value of treatment cannot be gauged merely from the relief of symptoms, important as this may be, for its effect upon other conditions resulting from enlargement of the prostate must also be considered, the chief being the tendency to malignant degeneration and the secondary renal changes. That the enlarged prostate does show a predisposition to undergo malignant changes is evident from the examination of specimens removed at operation and also from the course of some of the cases. Cases where an apparently simple adenoma of the prostate becomes inoperable at a later date

owing to malignant changes are only too frequently seen. At the time that the enlarged prostate is revealed by symptoms, I am led to believe from investigations carried out that secondary renal changes are already present. These progress insidiously, and uraemia is the usual termination of the enlarged prostate; it is also responsible for a large percentage of the operative mortality.

I have occasionally used prostatic extract in early cases and when operation has been refused, but with no definite benefit. Such treatment does not appear to be based on sound physiological principles. It is doubtful if the prostate forms an internal secretion, for in cases where it is largely destroyed by tuberculosis or suppuration no symptoms or signs which could be related to the disappearance of an internal secretion are to be found. Were the enlargement secondary to some physiological need, its removal should be followed by some di order of function. Yet the man who has undergone prostatectomy is sound in body and mind. The mental changes sometimes seen are uraemic in nature. At one time I gave after operation a mixture of the glandular extracts upon the assumption that the endocrine glands suffered in the toxaemia resulting from the renal changes. It had apparently no result, and was discontinued as the action of some of the constituents was to raise the blood pressure, a condition it is most desirable to avoid. Prostatic extract had no effect. Renal extract may be of value, but so far it has not had an extended trial.

In recent years there has been a marked improvement in the operative statistics, due partly to improved technique but largely to the fact that it has been realized that palliative measures have only a temporary action and are in the long run harmful, and consequently the operation has been performed before renal changes have become advanced. A course of organotherapy might be tried in early cases, but not when once operation is indicated, unless this is refused. The results should be carefully scrutinized, since it is almost impossible to foretell what the clinical course of any case would otherwise be.

During the last two years I have seen a number of men between 45 and 55 years of age, complaining of some perineal discomfort and occasional nocturnal frequency. The prostate appeared to be larger than is normal at this age, but no evidence of inflammatory changes was to be found. The condition cleared up after local treatment and attention to the mode of living. One would, however, hesitate to claim that these were cases of incipient enlargement of the prostate.—I am, etc.,

Cardiff, March 24th. T. E. HAMMOND.

THE RECOGNITION OF AORTIC INCOMPETENCE.

SIR,—I should like to reply briefly to Dr. Rudolf's interesting comments on my paper on aortic incompetence. In none of my cases is it stated that the diastolic murmur was ever inaudible by me; it was always heard. All of the cases had enlargement of the heart, and this was downwards as well as outwards. In four of them enlargement downwards probably reached to behind the sixth rib: it did not reach the sixth intercostal space. It is these slighter enlargements of the left ventricle that are such an important pointer to diagnosis of aortic disease. The apex is noted as being in the sixth space in one of the cases, and in the two which died it was there also, though I have omitted to say so specifically. All the cases were undoubtedly of aortic origin, as I am sure Dr. Rudolf would have said had he seen them.

The pulmonary diastolic murmur which is heard in advanced mitral stenosis—called by Dr. Steell the murmur of high pressure in the pulmonary artery—is a different matter altogether, which I will not go into here. I may, however, thank Dr. Rudolf for the reference to his and other observers' work on the matter.

I am sorry that I cannot hear ear to ear with Dr. Broomhead, and in reply to his last communication will merely say that I do not know the systolic murmur which he finds is quite common in the second right space in healthy persons.—I am, etc.,

Manchester, March 23rd. E. M. BROCKBANK.

THE ETIOLOGY OF RHEUMATIC FEVER.*

SIR,—It was shown by Sir Arthur Newsholme in the Milroy lectures of 1895 that rheumatic fever bore a relation to the level of the ground water, and followed, in the late autumn and early winter (even in epidemic proportions), a hot, dry summer. In those lectures he did not suggest why the disease should have this relationship with meteorological conditions; he merely stated facts.

In a previous paper[1] I have shown that rheumatic fever does not occur in the Malay Peninsula, and probably not in the tropics at or about sea-level; and later on I tried to present a case for believing that the common rat-flea of temperate climates, *Ceratophyllus fasciatus*, is the cause of the disease.[2] The fact that the disease and the flea have similar affinities, that both occur in one part of the world and not in another, and the fact that those meteorological conditions which Sir Arthur Newsholme showed to cause an increase in the amount of rheumatic fever are those under which the rat-flea thrives best, point to a connexion between the flea and the disease.

Out of 97,914 deaths recorded in the State of Perak during five consecutive years not one was ascribed to rheumatic fever; in one year 103,609 in-patients were admitted to the hospitals of the Federated Malay States, but not one was diagnosed as suffering from this disease. Further, no case of mitral stenosis has been recorded in any of the returns of the Government hospitals or pathological institutions of the Malay Peninsula. These figures may be compared with the 2,000 cases of rheumatic fever per million living in Scandinavia,[3] and with the 6 cases of rheumatic fever out of every 45 adults occupying hospital beds in London.[4]

The non-existence of mitral stenosis in the tropics is most significant. A rheumatic lesion of a valve is characterized by a "slowly advancing scar formation"; "it is an associated condition of fibrosis and vascularization."[5] It is not the contraction of a scar already formed. The continuity of the process would seem to indicate that the cause is continuous; if an infection, a continuous infection. But in the latter stages bacteria cannot be found except as grafts. It seems probable that the cause of a disease, when a continuous process is going on and bacteria cannot be found, may be a protozoan. Two other diseases in their later stages show a slowly advancing scar formation: syphilis, which is a cause of many cirrhoses, and malaria, in which chronic enlargements of the spleen and liver show much increase of fibrous tissue. These lesions are bacteria-free, but both syphilis and malaria are caused by a protozoan.

An insect may either carry a bacterium or may be the host of a protozoan. I am suggesting that *Ceratophyllus fasciatus* is the host of a protozoan which is the cause of rheumatic fever, man and the rat being the alternative hosts.

A few cases of rheumatic fever have been said to have occurred in the tropics. But much has to be eliminated, especially diseases occurring in malarial subjects, before the diagnosis can be accepted. I submit that no case should be accepted until the complete syndrome of a typical case is present. A claim that an atypical case proves the presence of a disease cannot be conclusive. Neither rheumatic fever nor the flea, *C. fasciatus*, exists in the tropics.

At no part of any year—hot or cold, wet or dry—are the conditions in England similar to those of the tropics. In England a temperature of 76° F. perhaps never occurs, except for a few hours at a time; the mean of the tropics is 80° F. or a little higher. The climatic conditions of the late autumn and early winter of England obviously cannot occur in the tropics.

Dr. Jordan,[6] of the Tring Museum, has investigated the distribution of *C. fasciatus*. This he gives as from the Azores to Asia Minor, from Cyprus and Italy northward to Scotland and North Russia, extending (probably over Siberia) to Japan. Only one specimen has been found in the tropics, and this was in Bombay, and may have been imported. One other specimen was found in India at Bareilly, but this place is not in the tropics. *C. fasciatus* may exist in India, but not in the tropical part, which includes only about one-third of the peninsula. Other ceratophylli have been found in India, but these species, such as those of squirrels, have but few opportunities of biting man. Further, a difference of species is quite sufficient to determine different carrying powers in a given genus—a fact clearly shown by the different capacity of the various anophelines in carrying malaria.

Study of the bionomics of the rat-flea has shown[7]:

1. That the insect can stand temperatures up to about 76° F. (higher for short periods), and that at high temperatures it lays more eggs, and that a higher percentage of these are fertilized.
2. That a high temperature is best for the hatching of the eggs.
3. That the larvae do best at a temperatnre of about 60° F., with a high relative humidity, but they are killed instantly by getting wet.
4. That the cocoons lag under the heat of summer and the cold of winter, the insects emerging most frequently under the conditions of spring and autumn.
5. That the maximum incidence of this flea is in the early autumn.[8]

* In order to save space it has been necessary to omit some passages of this communication.

Thus it will be seen that the larval state, the most dangerous in the life of the flea, is least likely to be interfered with when the ground water is low, and further that a hot, dry year is the most favourable to every stage in the life of the flea. It will be seen that the normal highest incidence of fleas precedes by but a few weeks the rise in the incidence of rheumatic fever.

Sir Arthur Newsholme mentioned that rheumatic fever is more common in those counties which have a large urban population. In Cambridgeshire by far the largest number of fleas collected from rats were *Ctenophthalmus agyrtes*.[9] This flea is a country flea and is said not to bite man. *C. fasciatus* is a town flea and does bite man.

Finally, I may say that as the geographical distribution of subinfective endocarditis, rheumatoid arthritis, and of scarlet fever are similar to that of rheumatic fever, the cause of these diseases must be searched for along the same lines as that of rheumatic fever. They are possibly all caused by protozoa and possibly all flea-carried. If this is so, it may be that a cure will be found in some such drug as is successful in the treatment of other protozoal diseases.—I am, etc.,

J. TERTIUS CLARKE, L.R.C.P.Lond.,
M.R.C.S.Eng., D.P.H.Camb.

Kulim, Kedah.

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PERNICIOUS ANAEMIA AND SEPTIC ANAEMIA.

SIR,—In Dr. Hunter's lecture (March 18th, p. 421) there is one statement which appears to be due to a misinterpretation of the appearances of the bone marrow. He says:

"Furthermore, the action of septic infection is to retard blood formation in the bone marrow (a pale bone marrow). It thus counteracts the action of the haemolytic infection, which is to stimulate blood formation (red bone marrow). The removal of the sepsis therefore frees the bone marrow from a markedly depressing influence, and allows the full compensatory powers of the bone marrow free play."

If Dr. Hunter be correct in his belief that there is a separate septic element in the so-called pernicious anaemia, one would be glad to know why the pale bone marrow should be one which is in a state of depression rather than one in a state of leucoplastic reaction. One cannot regard the presence of a septic infection as an influence likely to depress the haematopoietic functions of the marrow; it is rather one which leads to an increased function. The pallor of the marrow may thus be due to an increase of marrow activity in the direction of leucopoiesis, but it must be remembered that the precursors of the red corpuscles are colourless and that, therefore, a marrow in which much early erythropoietic activity is occurring would necessarily be pale.

Another important point which requires elucidation is the line of separation between septic anaemia and haemolytic anaemia: the degree of haemolysis in septic infections as observed at autopsy can be gauged by the intensity of the "free iron" reaction in the liver, and if Dr. Hunter will try this reaction in a number of cases he will find that it is positive in all cases of some standing.—I am, etc.,

ALFRED PINEY, M.R.C.P.Lond.

Birmingham, March 18th.

GOITRE.

SIR,—Without being able to add any experience of mine as to the correctness of Dr. Martin's "analogical guesswork" (March 11th, p. 412) in his treatment of enlarged prostate, I can confirm his experience of the success in the "patient administration of small doses of thyroid extract in cases of early soft parenchymatous goitre." Dr. Martin, however, is only partly correct in his statement that "it is no good giving thyroid extract in cases of enlarged thyroid of long standing." I have recently treated such a case in a woman of 45 whose gland became suddenly painful with increased enlargement, particularly on the right side. The pain ceased and the gland decreased in size after a few weeks of thyroid extract. The patient believes that the whole gland is less than it was before the acute symptoms commenced, but of this I am not able to judge, though I have seen improvement in other long-standing cases under the same treatment, but never cure as in the soft variety of goitre. In Dr. Rudolf's able and interesting paper on "The treatment of insomnia" no mention is made of the part a loss of balance of the endocrine secretions may play in the cause of sleeplessness. Some two years ago I treated a woman of 50, of whose family four have suffered from goitre, but who has never had goitre herself. She complained of debility, exhaustion, and particularly of sleeplessness. Remembering her family history, that her two younger sisters had goitre, and that I had cured her two daughters (aged 12 and 15 respectively) of this trouble, and as the ordinary remedies for insomnia had failed to give relief, I resolved to try thyroid extract. The effect was almost immediate, as she began to sleep soundly after a few doses and so far has remained cured of her insomnia. Such a result, of course, may have been merely *post hoc*, but if *propter hoc* it is a considerable support of Dr. Martin's system of "analogical guesswork."

In Dr. Gibson's interesting statistics on goitre he might have added Warrington to his list, for the number of Warrington patients who come for other troubles, but who unsuspectingly have more or less enlargement of the thyroid gland, is truly astonishing. The water in Warrington is unusually hard, which also may account for a good deal of the rheumatism prevalent there. Yet neither defective water nor fats are alone responsible for goitre. Excess of chocolate is just as bad, and also of oranges and lemons, and so is excess of bread. I know a girl of 18 whose only error in diet is that she will eat as much bread at one meal as would suffice three average adults. The detriment in her case is a steadily developing goitre; otherwise it is reasonable to suppose that she would put on fat or suffer from rheumatism, or some other trouble arising from toxaemia, and if so, her enlarged gland is a clinical picture as to the reason of the efficacy of thyroid extract in obesity and ailments arising from the rheumatic diathesis. The starch in the bread becoming sugar in the system acts like the chocolates in overloading the organism with urates. The acids in oranges and lemons probably act much as the fats do in producing goitre. To eat these things in excess so long as the excretory systems remain intact will do little harm; but the trouble is that in most cases the kidney eliminative cells, chiefly the tubular epithelia, are rendered half dormant by the toxins induced by such excess in diet. Hence the demand for increased thyroid secretion, possibly to correct the defect in the kidneys, and hypertrophy of the gland in consequence.—I am, etc.,

WILLIAM BRAMWELL.

Liverpool, March 12th.

THERAPEUTIC EFFECT OF IPECACUANHA IN COMBINATION WITH TANNIC ACID.

SIR,—Your report of the Tropical Diseases Section of the Royal Society of Medicine (December 31st, 1921, p. 1115), I regret to say, has incorrectly stated that I "confirmed the benefit derived from the combined use of tannic acid with emetine or ipecacuanha," by Dr. Manson-Bahr and Sir Leonard Rogers.

My statement was that I could corroborate the fact that *neither nausea nor vomiting was caused by doses of 20 or 30 grains of ipecacuanha if combined with tannin.* I had given some hundreds of such doses in the years 1916–17, and had found *no clinical benefit therefrom* before I recollected that tannin was an antidote to most alkaloids. I found that emetine was precipitated by tannin and that when adding tannin to ipecacuanha we were practically giving *ipecacuanha sine emetina*, or, in other words, *ipecacuanha sine bono.*

Ipecacuanha is usually given on an empty stomach. Vomiting after the ipecacuanha alkaloids or their salts does not as a rule take place till one or two hours after being swallowed. From this we may conclude that it is absorbed from the intestine. If the tannate be dissolved by the HCl of the stomach it is promptly precipitated again on reaching the intestine.

In confirmation of Professor Dudgeon's opinion that past histories of dysentery were often open to doubt and unreliable, I stated that I had performed autopsies on six cases who had died of liver abscess who said they had never suffered from dysentery, and in all six I found either active ulceration or scarring in the colon.

Since the meeting I have asked Dr. G. Roche Lynch to repeat my former tests, which he was kind enough to do. His report states:

"(1) If tannic acid in solution is mixed with emetine HCl the faintest opalescence is obtained.

"(2) If tannic acid in solution is added to a solution of emetine (base) a distinct opalescence is produced.

"(3) If to the opalescence obtained in (2) a drop of HCl about 0.1 per cent. is added the precipitate immediately disappears.

"(4) If to a mixture of emetine HCl and tannic acid or emetine base and tannic acid a minute fragment of $NaHCO_3$ or a drop of very diluted solution of $NaHCO_3$ is added an immediate heavy precipitate is obtained.

"The experiments show that in the stomach emetine in the presence of tannic acid is in solution, but that as soon as the stomach contents reach the small intestine (the contents being alkaline) the emetine is precipitated in the form of tannate, which is consequently not absorbed. I suggest this as an explanation of the absence of the vomiting when ipecacuanha is given with tannic acid.

"The vomiting, I am informed by Dr. Powell, occurs about two hours after taking, which is suggestive that the ipecacuanha alkaloids are absorbed mainly from the small intestine and only slightly, if at all, from the stomach.

(Signed) "G. ROCHE LYNCH.

"Tropical Diseases Clinic, Chelsea, March 3rd."

—I am, etc.,

London, W., March 10th. ARTHUR POWELL.

THE NAVAL MEDICAL SERVICE.

SIR,—The letter of Mr. Gerald Sichel (February 18th, p. 292) caused me to refer to a report by the British Medical Association on "The shortage of medical officers in the Royal Navy," which was published in the JOURNAL of July 11th, 1914, with a view to ascertaining how many of the reforms therein suggested have been carried out in the eight years that have elapsed. The suggestions were under seventeen headings. Of these it may be claimed that only six have been fully or partially adopted, while the remaining eleven are still amongst the grievances of to-day, so it should not be a matter for surprise that there is still some discontent in the Naval Medical Service, or that as a service it is unpopular outside.

Since the report referred to the titles of the medical branch have been brought into line with the deck or executive branch, and the "curl" has been added to the pre-existing medical branch distinction mark, but this "reform" was somewhat half-hearted, and it must not be imagined that a medical officer in the navy has the privileges of an officer of similar seniority in the executive branch. For instance, he cannot yet be president of the mess in which he is the senior officer; he cannot sit on courts martial even when one of his own branch is being tried; he does not get a cabin commensurate with his seniority; and he is at a disadvantage in the matter of boats. While the medical officer is thus debarred from many of the privileges which should have accompanied the changes of titles, he does not escape the disabilities; and if he be put on half-pay, or retire on a half-pay basis, he draws the half-pay of his executive, not medical, rank.

Medical specialization has been introduced since the report, but in a way which has produced some discontent rather than the reverse, for officers are appointed as specialists without any previous training or examination, so that the only way in which an officer who desires to specialize can do so is to beg for an appointment as such. Hospital appointments, too, are made in a haphazard manner in the first instance, and perhaps there is no great difference in the medical attainments of naval medical officers on joining; but the matter is one of some importance to the individual, since the appointment to a hospital introduces the officer into a sort of "inner circle," which ensures his return to hospital at some future time and enhances his chance of promotion.

Another grievance is the reduction of the retiring age for surgeon commanders from 55 to 50, which has the effect of depriving a large number of senior officers of five years of full pay at a time when their families are growing up and when they themselves are well capable of continuing their work.

When discussing naval pay one should not be misled by any comparison of the "daily rate" of the various branches, for it must be remembered that the executive branch alone are entitled to such allowances as command pay, table allowance, entertainment allowance, etc., many of which are free of income tax, and may amount to over £1,000 per annum in the higher ranks.

There are two schemes by which the disabilities of the Naval Medical Service can be removed:

1. To grant to medical officers all the privileges of their relative rank with the executive branch, while retaining their pay on a higher relative scale by a "professional allowance," as obtains at present.

2. To combine all the military medical services of the Navy, Army, and Air Force, thus making a British medical service.—I am, etc.,

SURGEON COMMANDER.

SUICIDE IN BORDERLAND CASES.

SIR,—In reply to Dr. Plummer's interesting letter (p. 371), I would like to say I entirely agree that the care given to cases of mental disorder should be assimilated to the kind of care we bestow upon bodily disorder (a view shared by a Commissioner, Dr. C. Hubert Bond). This would seem the only method by which the foolish idea of taint or stigma can be swept away.

Dr. Plummer asks, "What does Dr. White want?" I want the methods in vogue under the present lunacy system to be revolutionized. A medical superintendent once said to me, "If I thought I was going to be put in a lunatic asylum, I would shoot myself!" Until hope and cheer are substituted for suppression, reassurance for intolerable anxiety, interest and occupation for vacancy, comprehension and kindly sympathy for indignity, asylums will continue to be dreaded worse than death; and the very thought of being "put away" will not cease to be a fruitful cause of attempted suicide. It seems in the last degree irrational to subject depressed cases to an atmosphere of dismay, ignominy, foreboding, and acute distress. I know of a few asylums where the atmosphere is the opposite of that just described, where the head-doctor is beloved, and where patients are not afraid to apply for re-admission. Let us hope that within a few years such mental hospitals, in the true sense, will become the rule.

Meanwhile the need of the uncertifiable is for sanatoriums run on purely *hospital* lines—that is, without detention, and having no link with lunacy—to prevent early cases becoming certifiable. Professor G. Robertson has assured us there is nothing to prevent these being started immediately, and the benefit from them would be incalculable.

I have always favoured the proper procedure of legal certification for the certifiable, with provision for full inquiry and right of appeal. A man should be tried for his sanity as for his life, and no safeguard provided by the Lunacy Act should be infringed. The "alleged lunatic" ought to be told of the allegations made, and have the benefit (should he desire it) of legal aid. I am opposed to every attempt made in recent years to place any patient under lunacy control by some subterranean device intended to evade judicial certification. Liberty is too precious a thing to be thus jeopardized.

The Board of Control is to blame, I think, for ratifying without careful inquiry every (amended) certificate sent up to them, when scrutiny would have detected instances where the requirements of the Lunacy Act had been ignored, or where the grounds for committal are patently frivolous. The Board is to blame also for not invalidating certification when conspicuous illegalities are brought to their notice by a patient who has only been able to discover them upon discharge—for example, where he has not been accorded his right of appeal to a magistrate, or where his own doctor's opinion has been put out of court (as in a recent case), "for the reason that two mental specialists had already been called in." Such negligence is likely to bring the proper function of the Board into disrepute.

The problem of dealing properly with the certified would be immensely simplified if asylums were cleared of all inebriate, puerperal, epileptic, and mental deficiency cases, and if these classes were relegated to appropriate homes. Infirmaries ought to be obliged to retain and deal with their own transiently delirious cases, instead of being permitted to dispatch them to asylums, to their detriment. The medical and nursing staffs of asylums would, after this clearance had been effected, have a much better chance of promoting the recovery and restoration of the really insane.

Lastly, I desire to thank "M.D." for his friendly reminder about the Board of Control in your issue of March 11th, but would like to explain my reason for the name I used. The Board is composed of Lunacy Commissioners *plus* Mental Deficiency Commissioners. I have been dealing solely with the former, and the Lunacy Act differs in its provisions from the Mental Deficiency Act. No one would rejoice more than I at the sweeping away of any opprobrium connected with mental cases.—I am, etc.,

London, March 13th. S. E. WHITE, M.B., B.Sc.

CHEAPER SPAS.

SIR,—By its recent decision to reduce existing charges the British Spa Federation has shown some courage, but I think wise foresight. For though it is at present admittedly difficult for spa establishments to be self-supporting, yet it is equally true that they cannot really and permanently

flourish unless they are made available for all sections of the population.

The remarkable curative results obtained at the mineral waters hospitals in our country, as well as their long waiting lists and the financial support given to these institutions by those who profit by them, show not only the solid medical work done at the British spas, but the appreciation in which this work is held in the industrial world, both by employers and employed. Unfortunately, as elsewhere, the private patient often fares less well than the hospital patient, and yet it is hard to see why the benefits enjoyed by the rich and by the poor should not be made available for persons of straitened means.

I venture to assert from long experience that many delicate people, as well as invalids, ought to take their annual holiday at one or other of the spas, at home or abroad. The complete change, the mental and physical rest, the fine air, and pleasant recreations, make an ideal background for the skilful use of waters and baths, and experience continually shows that chronic ailments are best held in check by such means and valuable lives prolonged for many years. How can such benefits be brought within the compass of hard workers with reduced income? They cannot afford the best hotels. I have often thought that the need of these serious visitors would best be met by clean and wholesome "spa hostels" or "spa pensions" providing a simple and regulated diet. Something is wrong if, broadly speaking, the spas can only cater for the "rich" and the "poor."

Another serious matter for the British spas and their clientèle is the increased cost and diminished facility of the railway service. Many years ago the railway companies concerned consented to run through carriages from London to a spa in the Highlands during the summer months. The return fare was then sixty-three shillings. By this means not only were invalids and ladies travelling alone able to make the journey in safety and comfort, but also thousands of jaded and ailing health seekers. Now it is cheaper to visit a French or Swiss spa than to make this journey to Scotland. I hope that, in view of such facts, every support will be given to the British Spa Federation in their efforts to secure a better railway service.—I am, etc.,

London, W., March 22nd. R. FORTESCUE FOX.

GERMAN-MADE SURGICAL INSTRUMENTS.

SIR,—Letters have recently appeared (BRITISH MEDICAL JOURNAL, February 25th, p. 331, and March 18th, p. 457) with regard to the importation of German *x*-ray and electro-medical apparatus, and we should like to draw the attention of the medical profession to the fact that the same conditions apply to the surgical instrument industry.

The training of the highly skilled workmen in this trade involves an apprenticeship of six or seven years, and the remuneration has never been high as compared with less highly skilled work. The making of surgical instruments is really a handicraft, and does not lend itself to "mass production." In following the progress of modern surgery new models are being constantly evolved and the older ones discarded. The variety of the work is phenomenal, as may be seen by reference to any instrument maker's catalogue.

At the present time there is much "short time" and unemployment among a most deserving set of men, due in great measure to the importation of German instruments, which, owing to the difference in exchange, are being offered at or below pre-war prices. It should be noted that such instruments are not equal to the high standard of British manufactures.—I am, etc.,

G. R. CHEESMAN,
Hon. Sec., Surgical Instrument Manufacturers' Association (Incorporated).

March 20th.

THE CONFERENCE OF STAFFS OF HOSPITALS.

SIR,—At the Conference of Hospital Staffs in December, 1920, the Chairman of the Hospitals Committee, in opposing the admittedly logical arguments of Dr. Peter Macdonald, pleaded in eloquent terms for the retention of the voluntary system on sentimental grounds, urging that unlogical people and things might yet be very lovable. Such was the moving force of this appeal that the amendment of Dr. Macdonald was lost by an immense majority. In the afternoon the delegates, refreshed doubtless by an interval for lunch, took a more robust and worldly view of the situation, and, urged thereto by the quite unsentimental but, as he truly claimed, strictly logical arguments of the Leicester representative, agreed, also by a huge majority, to get all the money that they could. Now, at the recent conference, the staff delegates, while adopting various proposals calculated to increase very materially the labour of lay administrators, endorsed the unfamiliar doctrine that the essence of the voluntary system is that these gentlemen alone should work unpaid. In plain English, they are to be told to put their backs into it, and labour overtime without remuneration of any kind, in order that the "honorary" medical staff may be paid for practically all that they do. Having, I confess, some diffidence in placing this view of their duties before our lay board, I should be indeed grateful if the Chairman of the Hospitals Committee, or other leading light, will advise me whether this particular proposition is to be advocated entirely on the plea of sentiment, or is, on the contrary, to be recommended on the score of logic. Also I am tempted to wonder how long these often busy laymen who, unlike the medical staff, reap no indirect reward, will continue to officiate under these somewhat novel conditions, and what will happen to the voluntary system when they revolt.—I am, etc.,

Chichester, March 24th. G. C. GARRATT.

"A CENTURY OF MEDICINE AT PADUA."

SIR,—Sir George Newman's essay, reviewed in your columns to day, is addressed to the students of St. Bartholomew's Hospital and is the outcome of the musings of its author "on a sunny spring morning in the year of our Lord, 1921."

The pamphlet is *undated;* but I think it must have been published since my Harveian oration (October 18th, 1921). Owing to the absence of the date on Sir George Newman's publication and the incorporation in the essay of some sentences closely resembling those in my Harveian oration (to which no reference is made) it might be thought that I had copied them from Sir George Newman's essay, which is not the case. Of the University building at Padua I wrote: "From contemporary prints[1] we can see what the University building—the 'Gymnasium omnium disciplinarum'—was like. . . . Over the gateway was the stemma of a Doge of Venice and beneath it the Lion of St. Mark. . . . There still remains the legend 'sic ingredere ut te ipso quotidie doctior evadas.'" Sir George Newman writes: "Over the gateway was the Lion of St. Mark with the legend *Gymnasium omnium disciplinarum*, and above the escutcheon of the Doge of Venice the words 'sic ingrede [*sic*] ut te ipso quotidie doctior evadas.'".

I was at some trouble to ascertain the significance of the "Cicogna" stemma over the gateway, as indicated in a footnote (BRITISH MEDICAL JOURNAL, loc. cit.).

Sir George Newman's essay contains some misspellings of proper names—for example, "Aldus Manutus," "Realdous Columbus," "Hieronymous Fabricius," "Hieronymous Fracastorius," and "Fallopius" (which should be spelt with two p's). And it is strange that the lecturer on public health at St. Bartholomew's Hospital should tell the students that Harvey "probably graduated in 1602." There is nothing uncertain about the date of Harvey's graduation at Padua, which took place on Thursday, April 25th, 1602, as shown on Harvey's diploma, one of the treasures of the Royal College of Physicians.

But these are slight flaws in a charming essay, which had it been dated would not have called forth this letter.—I am, etc.,

London, W., March 25th. HERBERT R. SPENCER.

[1] One was published in the BRITISH MEDICAL JOURNAL, 1921, ii. p. 622.

THE late Miss E. Ratcliff bequeathed £10,000 to the Burton-on-Trent Infirmary, which had previously benefited by gifts from her family amounting to £20,000.

THE late Mrs. Elizabeth Clarke of Newton Abbot, who died in November last, leaving net personalty of £234,000, has bequeathed £1,000 each to the Newton Abbot Hospital and Dispensary, the Tudor Fund for convalescents in connexion with that hospital, the Moretonhampstead Convalescent Home, and the West of England Eye Infirmary, Exeter, and £500 to her esteemed friend and medical attendant, Dr. William Gifford Scott, for his kindness and unfailing attention. She left her residence, Kanawha, and lands adjoining to her nephew, Dr. Arthur Henry Bindloss, who also receives one-sixth of the residue of her property. The King Edward's Hospital Fund is also to receive one-sixth of the residue of the property.

Obituary.

JOHN TURNER, M.B., C.M.

THE death is announced of Dr. John Turner, at the age of 62. He was born at Portsmouth and educated at Aberdeen University, where he graduated M.B., C.M. in 1883. He was connected with the Brentwood Mental Hospital for over 36 years, and was appointed medical superintendent of the institution in 1910. He took great interest in pathological research work, and contributed to our columns articles on vertebral puncture in general paralysis of the insane in 1896, on the pathology of epilepsy in 1906, and on changes in the conception and treatment of insanity in 1912, the latter being his presidential address to the annual meeting of the then East Anglian Branch of the British Medical Association. He also contributed papers to the *Journal of Mental Science*, including one on appearances indicating phagocytosis in brains of the insane, published in 1897, for which he had been awarded the bronze medal of the Medico-Psychological Association. On his retirement from Brentwood he went to reside at Rochford, and took a keen interest in the history and antiquities of the neighbourhood, having as recently as February 24th delivered an historical address on Essex windmills. He was a brother of the late Sir George Turner, who was well known in connexion with leprosy research. He is survived by his widow.

DR. THOMAS HANSON SMITH of Reddish, Stockport, died on March 14th, aged 64. He was educated at Leeds and Manchester, took the diplomas of L.R.C.P. and S.Edin. in 1881 and D.P.H.Camb. 1897, and graduated M.D.Durh. in 1899. After practising for a short time in Bradford and Manchester he removed to Stockport, where he practised for forty years. Before Reddish became incorporated with Stockport he was M.O.H. to the Reddish Urban District Council. He was a Fellow of the Society of Medical Officers of Health and a member of the Stockport, Macclesfield, and East Cheshire Division of the British Medical Association. He was president of the Reddish Conservative Club from 1915 to 1921. Dr. Smith had been in failing health for the last twelve months, and is survived by his widow and two daughters.

WE regret to record the death of Dr. CHARLES PINKERTON of Southport, which took place suddenly, at Hastings, in his 65th year. Dr. Pinkerton was a native of Glasgow, and was educated at Glasgow University, graduating M.B., C.M. in 1879, and M.D. in 1882. Some forty years ago he commenced general practice in Southport, and was formerly surgeon (subsequently consulting surgeon) to the Southport Eye, Ear, and Throat Hospital. He was a former president and one of the founders of the Southport Medical Society. Dr. Pinkerton did not take any prominent part in public life; he will be remembered in Southport by his devotion to his patients and his optimistic point of view. He was an old member of the British Medical Association, and was the author of two contributions to our columns on surgical subjects.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE following candidates have been approved at the examinations indicated:

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.—*Part I (Physics and Electrotechnics)*: E. G. Barker, M. Bienenstock, P. M. Desai, J. A. Geraghty, B. Grellier, S. M. Hepworth, J. P. Thierens, J. A. Thomson, O. R. Unger. *Part II (Radiology and Electrology)*: M. Bienenstock, F. T. Burkitt, J. D. Kidd, J. S. Levack, Margaret C. Murphy, W. K. Parbury, J. L. Sen, J. S. Webster.

UNIVERSITY OF LONDON.

A MEETING of the Senate was held on March 22nd.

Mr. C. A. Pannett, M.D., B.S., B.Sc.Lond., F.R.C.S., was appointed to the University Chair of Surgery, tenable at St. Mary's Hospital Medical School. He has been Assistant Director of the Surgical Unit at St. Mary's Hospital since 1920.

Mr. C. A. Lovatt Evans, D.Sc.Lond., L.R.C.P., M.R.C.S., was appointed to the University Chair of Physiology, tenable at St. Bartholomew's Hospital Medical College. He has been Professor of Experimental Physiology and Experimental Pharmacology in the University of Leeds since 1917.

The degree of D.Sc. in physiology was conferred on Miss E. E. Hewer, an internal student of Bedford College, for a thesis entitled: "Some functions of the suprarenal glands."

UNIVERSITY OF DURHAM.

AT the Convocation held on March 25th the following degrees were conferred:

M.D. (*For Practitioners of Fifteen Years' Standing*).—D. J. Lewis, J. L. Meynell.

M.B., B.S.—A. Angus, F. J. Benjamin, W. N. Crowe, C. C. Carr, J. F. Coltman, R. A. McK. Dickson, R. L. Dagger, E. R. Dingle, Barbara M. Grinling, G. A. M. Hall, L. Hunter, J. Jackson, R. W. Locke, T. S. Storey, L. W. Studdy, S. J. C. Smith, Gladys Stableforth, W. P. T. Watts, Olive C. Wilson, Philomena R. Whitaker.

UNIVERSITY OF EDINBURGH.

THE Senatus Academicus of the University of Edinburgh have resolved to offer the honorary degree of Doctor of Laws to the following: Professor Sir Isaac Bayley Balfour, K.B.E., M.D., Professor of Botany, Regius Keeper of the Royal Botanic Garden, and King's Botanist for Scotland; Professor Emeritus Sir Halliday Croom, consulting gynaecologist, Edinburgh Royal Infirmary, consulting physician, Edinburgh Royal Maternity Hospital; Professor Charles James Martin, C.M.G., M.B., D.Sc., F.R.S., Director of the Lister Institute of Preventive Medicine, Professor of Experimental Pathology in the University of London; Professor Sir Charles Scott Sherrington, C.B.E., M.D., LL.D., Professor of Physiology in the University of Oxford; John Thomson, M.D., consulting physician to the Royal Edinburgh Hospital for Sick Children, formerly University Lecturer on the Diseases of Children.

QUEEN'S UNIVERSITY, BELFAST.

AT the graduation ceremony on March 22nd the following degrees and diplomas were conferred:

M.D.—J. C. Robb, P. S. Walker.

M.CH.—J. C. Robb, O. Wilson.

M.A.O.—D. M. Clements.

M.B., B.CH., B.A.O.—*R. I. Poston, †A. H. M'C. Eaton, W. S. Gibson, W. Lascelles, Mary C. Lindsay, I. H. M'Caw, Florence M. Anderson, W. A. Brown, J. C. Carson, Martha L. Dunlop, Elizabeth Dysart, Margaret H. Elliott, W. M. Keys, G. L. Love, J. S. Lyle, W. M'Cartan, A. E. M'Corkell, A. L. M'Curry, J. S. M'Glade, F. S. Mayne, H. Meharg, Elizabeth Morrison, J. L. Murray, R. W. Mussen, Agnes M. Puree, R. B. Quinn, J. C. Ramsay, R. J. Rosborough, T. Savage, C. A. Thompson, C. A. Wallace.

D.P.H.—Eileen O Bartley, C. R. Christian, T. H. Crozier, J. H. Dunn, Eileen M. Hickey, J. S. J. Lee, Mary M. Merrick.

* First class honours. † Second class honours.

Medical News.

THE King has approved the appointment of Dr. John S. Griffiths, Redland Park House, Bristol, to be a deputy-lieutenant for Gloucestershire.

A MEETING of the Cambridge Medical Society (members of the Cambridge and Huntingdon Branch of the British Medical Association are entitled to attend) will be held at Addenbrooke's Hospital, Cambridge, on Friday, April 7th, at 2.30 p.m., when cases, specimens, etc., will be shown and discussed.

AT the meeting of the Royal Microscopical Society, 20, Hanover Square, W., on April 19th, at 8 p.m., Dr. R. S. Ludford will read a paper on the morphology and physiology of the nucleolus.

AT a meeting of the Optical Society at the Imperial College of Science, South Kensington, at 7.30 p.m., on Thursday, April 6th, a paper on diffraction halos in normal and glaucomatous eyes will be read by Mr. H. H. Emsley, B.Sc., and Mr. E. F. Fincham. At the June meeting of the society there will be a discussion on spectacle construction. Further information can be obtained from the joint honorary secretary of the society, Glass Research Association, 50, Bedford Square, W.C.1.

A DISCUSSION on economy in sanitary appliances and methods of drainage will be opened by Sir Henry Tanner, C.B., F.R.I.B.A., at a meeting of the Royal Sanitary Institute, 90, Buckingham Palace Road, S.W.1, on Tuesday, April 11th, at 5.30 p.m.

THE Medico-Legal Society has arranged to establish a library at the house of the Medical Society of London, 11, Chandos Street, W.1. Gifts are invited. The collection will be open to members at convenient hours.

A SUMMER session of the South-West London Post-Graduate Association will begin in May. Particulars can be obtained from the honorary secretary, Dr. H. B. A. Pearson, 29, Bolingbroke Grove, S.W.11.

THE Food Education Society has arranged a discussion at the Caxton Hall, Westminster, on Friday, April 7th, on feeding in institutions with special reference to school diet. It will be introduced by Miss A. D. Muncaster, formerly a member of the kitchen inspectorial staff of military hospitals. Sir William Collins will take the chair at 5.30 p.m.

SIR THOMAS LEWIS will deliver the Noble Wiley Jones lectures under the auspices of the medical school of the University of Oregon, U.S.A., between May 15th and 19th; the lectures will deal with auricular fibrillation, quinidine and digitalis.

A FAREWELL dinner is to be given to Dr. James Niven, late medical officer of health of Manchester, by the members of the medical profession in Manchester. It has been decided that the guests may include members of the medical profession and persons connected with the Manchester Corporation, University, and Insurance Committee. The dinner will be held on Tuesday, April 11th, at the Queen's Hotel, Manchester, at 8 p.m., and tickets (15s. each) may be obtained from Dr. R. G. McGowan, Union Bank Buildings, Piccadilly, Manchester.

AT the instance of the International Labour Office a meeting was held recently in Geneva to consider various problems relating to men disabled in the war or in industry. The meeting was attended by representatives of organizations of ex-service men and official departments concerned with disablement in France, Great Britain, Italy, Poland, Germany, and Austria, and by representatives of the Health Section of the League of Nations and of the League of Red Cross Societies. The meeting expressed an opinion in favour of the establishment of an international institution to collect information and to organize an international exhibition of artificial limbs and other orthopaedic instruments. The meeting was of opinion that legislation concerning industrial accidents should be amended so as to allow men disabled in industry to have the benefit of the experience gained during the war, and to this end advised co-operation between departments dealing with the supply of artificial limbs and orthopaedic instruments to disabled ex-service men on the one hand and social insurance organizations on the other. It considered that the departments established for the benefit of ex-service men should to some extent be maintained permanently. It is hoped that the exhibition, when once the materials have been gathered at Geneva, will visit other countries.

THE Board of Control, with the approval of the Minister of Health, has appointed a committee to consider the clinical and other records kept in county and borough mental hospitals, and to report in what ways the system of keeping them can be improved and what alterations in the Commissioners' rules in regard to them are desirable. The members are Dr. A. Rotherham, M.B. (Chairman), Commissioner of the Board of Control; Dr. H. A. Kidd, C.B.E, medical superintendent, West Sussex County Mental Hospital, Chichester, and Dr. S. J. Gilfillan, O.B.E., medical superintendent, London County Mental Hospital, Colney Hatch. The Board has also appointed a committee "to consider the dietaries in county and borough mental hospitals, and to report what changes, if any, are desirable, and whether a minimum dietary scale should be fixed." The members are: Dr. R. W. Branthwaite, C.B., M.D. (Chairman), Commissioner of the Board of Control; Dr. M. Greenwood, medical officer (medical statistics), Ministry of Health; Dr. R. Worth, O.B.E., M.B., medical superintendent, Springfield Mental Hospital, Tooting; and Dr. L. O. Fuller, medical superintendent, Three Counties Mental Hospital, Arlesey, Beds. The following members have been added to the committee which is to inquire into the nursing service of mental hospitals: Mr. E. Sanger, ex-Chairman of the London Asylums Committee; Mrs. Pinsent, Commissioner of the Board of Control; Miss M. M. Thorburn, R.R.C., matron at Horton Mental Hospital.

DR. F. J. PEARSON of Owston Ferry, Doncaster, has been presented with a cheque for £56 by friends and well-wishers. The presentation was made by the Bishop of Grantham, and at the same time Mrs. Pearson was presented with a gold brooch set with pearls.

THE report of the Royal Portsmouth Hospital for 1921 contains the following: "The Committee record with deep regret the death of Dr. J. Ward Cousins, J.P., who was on the active staff of the hospital for forty-eight years, retiring in 1908, when he was elected a consulting surgeon and also a vice-president. He worked unceasingly for the interests and development of the hospital. A surgeon of exceptional ability, his professional services were of the highest order, whilst his keen judgement and ardent zeal were of the greatest value in the movement which led to the building of new wards and the reconstruction of the old building. His work in connexion with the hospital will stand as a living memorial of his name."

THE number of deaths from influenza continued to decline in the week ending March 25th; in the 105 great towns there were 104 deaths from the disease, as against 146 in the preceding week; in London the number was 17, as against 21 in the week ending March 18th.

DR. EDWIN RAYNER, at one time treasurer of the British Medical Association, left estate of the value of £42,241.

THE Ligue d'Hygiène Mentale, founded in Paris to promote the early and preventive treatment of mental disorders, has succeeded in securing the establishment of several dispensaries in the Department of the Seine.

THE editor of *Industrial Welfare* informs us that at the present time more than 200 firms are publishing welfare magazines. The firms include engineers, iron and steel manufacturers, collieries, ship builders, millers, food stuff manufacturers, banks, textile firms, railways, and distributing firms. A conference of editors of such magazines has been arranged by the Industrial Welfare Society and will be held at its offices, 51, Palace Street, Westminster, on April 28th.

THE "Holy Rollers" are a sect new to us; the members believe that diphtheria can be cured by faith. An epidemic of the disease at Prentiss, Maine, U.S.A., is attributed to the belief of the parents of a sick child in this doctrine. The child died, and within a few days there were ten cases of diphtheria in the immediate vicinity.

AT the examination held recently for the diploma of membership of the Society of Radiographers there were forty-five candidates, of whom seventeen passed in both sections. The next examination is to be held in July. Two prizes of ten guineas and one of five guineas were awarded for theses by members of the society on radiographic subjects.

PROFESSOR EHLERS of Copenhagen has received the honorary degree of doctor from the University of Paris.

THE German Congress of Surgery will be held at Berlin, under the presidency of Professor Hildebrand, from April 19th to April 22nd, when the following subjects will be discussed: The experimental principles of wound infection, introduced by Neufeld of Berlin; general surgical infection, introduced by Lesser of Freiburg; operative transplantation of muscles, introduced by Wullstein of Essen; and the importance of histological examination of the blood, introduced by Stahl of Berlin. The thirty-fourth meeting of the German Society of Internal Medicine will be held at Wiesbaden from April 24th to April 27th, under the presidency of Professor L. Brauer. The chief subjects for discussion will be jaundice, introduced by Profesor Eppinger of Vienna, and the hypophysis, introduced by Professor Biedl of Prague.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh*; telephone, 4361, Central).

QUERIES AND ANSWERS.

DR. DIXON (Hawick, N.B.) would be glad to hear from any professional brother willing to exchange bookplates.

DR. W. J. MIDELTON (112, Charminster Road, Bournemouth) asks for references to papers describing the condition of the brain, spinal cord, nerves, muscles, blood vessels, and lymphatics, in chronic arthritis.

INCOME TAX.

"J. S. B." is considering the purchase of a practice, and inquires as to the basis of assessment in the early years after the change.

*** For his first year he is liable to be assessed to tax on the basis of his predecessor's past profits for three years, for the second year on the basis of his predecessor's last two years and

his own first year, and so on; but if his earnings fall short of the assessment so calculated from some "specific" cause he is entitled for each of his first three years to substitute his actual earnings for the year for the average; in that case application must be made through the local inspector at the end of each year.

BLUSHING.

"E. B. S." asks for suggestions for the effective treatment of excessive blushing of the face, in a patient who has suffered from it since childhood. It comes on without the slightest provocation, even in the absence of company. As hyperidrosis can now be cured by local applications of electricity, he thinks that surely something similar might be evolved for excessive blushing which causes so much misery.

LETTERS, NOTES, ETC.

HYDROA AESTIVALE.

DR. F. PARKES WEBER (London) writes: In the account of the address by the Regius Professor of Medicine to the Oxford Medical Society (BRITISH MEDICAL JOURNAL, March 11th, page 393), we are told that all cases of haemato-porphyrinuria suffer from hydroa vacciniforme (aestivale). Apparently in all dermatological and other medical writings the neuter singular adjective is added to hydroa; but would not the neuter plural be more correct? The word hydroa, though not used by ancient Greek authors, ought to mean "the watery *things*"—that is to say, vesicles or miliaria, if the word should not really be written *hidroa* (Hippocrates, Galen), as suggested by Radcliffe Crocker and others. In the latter case it would mean "the sweaty *things*"—that is to say, sweat vesicles, heat spots, sudamina, or miliaria. In either case it would seem that, instead of vacciniforme, aestivale, one ought to add *vacciniformia, aestivalia*.

STERILITY WITH REFERENCE TO THE STATE.

DR. B. DUNLOP (London, S.W.) writes: Dr. R. A. Gibbons repeats (p. 430) the fallacy that an average of not less than three children per family is required to prevent a population declining. I believe that it was started in Germany, and was largely due to an assumption that her high infantile mortality was irreducible. An exposure of the fallacy was quite incidentally made by M. Leroy Beaulieu, one of France's leading opponents of birth control propaganda, in his book, *La question de la dépopulation*. For evidence was therein given that in 1901–05 the average number of children per family in France was 2.5, and that in 1906–11 it was 2.32. Nevertheless, the French population continued in these periods to increase, by excess of births over deaths, at its usual average rate of about 1 per 1,000 a year. Another exposure of the fallacy is provided by the fact that in 1919 the birth rate of England and Wales was only 18.5 per 1,000, and yet it exceeded the death rate by 4.7. If, therefore, the great majority of men marry and have at least two children, a small fraction over an average of two children per family will enable a population to increase—provided, of course, that the food supply has increased. It is reversed selection which causes "race suicide." Fortunately, our reversed selection will soon begin to disappear, for when the poor cease to have more children than they can themselves provide for, the great majority of the better-off will marry and have at least two children.

LIEUT.-COLONEL T. S. B. WILLIAMS, I.M.S.(ret.) (London, W.C.), writes with reference to the same paper: It is not true to say that the prosperity of a nation depends on "a good average birth rate." What it does depend on, if you must have a large and increasing population, is on the "survival rate." Looked at from this point of view, it is possible to have a population increasing both in numbers and physical fitness, although the birth rate is steadily and purposefully declining. In the same way his paper shows the inability, very common amongst medical men, to appreciate the fact that the grave physical ills which they are attempting to treat are very largely but symptoms of serious disease of an economic nature in the structure of the State. Good treatment is to go for the cause, and not to treat symptoms. At the present moment the profession is, very generally, treating symptoms, whereas, if they only made a study of political economy there might be some hope of such a change of mental outlook that they would go for the cause. All through his paper the author avoids facing real difficulties, and instead hands them on to "political economists and statesmen," which means that they are really dealt with by vested interests who are neither political economists nor statesmen.

CLINICAL FORMS OF INFLUENZA.

DR. D. OWEN WILLIAMS (Glandyfi, Cardiganshire) writes to confirm Dr. Kenda l's statement as to types of influenza with signs of pneumonia and a high temperature on one day to be followed, under treatment, by a normal temperature in twenty-four hours and ultimate recovery (p. 500). Dr. Williams adds: I have known cases in the recent epidemic with a temperature of about 102° and signs of pneumonia to have a normal temperature, under treatment, in twenty-four hours and ultimately to recover.

VICTIMS OF THE DRUG HABIT.

DR. PHILIP W. LAMB (London, W.) writes with reference to the discussions initiated in the House of Commons by Sir Charles Higham and Mr. Alfred Morris in connexion with the illegal sale of dangerous drugs: The provisions of the Dangerous Drugs Act will not prevent the illicit trafficker from plying his trade as long as the demand exists for his services. The miserable victims of drug habits should, he urges, be considered in the same light as cases of venereal diseases, and some measure of State support afforded for the provision and maintenance of institutions wherein the treatment and disciplining of those afflicted with drug habits may be carried out. I know, he continues, that many laymen will cry out against the suggestion on the ground of economy; but there is such a thing as false economy. Our duty to posterity—no less than to the present generation—requires that the achievements of science be brought into the widest use in order that those broken in mind and body may be restored to their proper place in the social and economic fabric. Why should they be regarded as non-effectives when medical knowledge and skill can restore to them confidence, self-control, and a real enjoyment of the benefits of normal living and thinking?

STAMMERING.

WITHIN a short period four different correspondents have written to us inquiring about the treatment of stammering. We would recommend our correspondents to read Section V of the report of the Chief Medical Officer of Education for the year 1913, published in 1914 by H.M. Stationery Office (price 1s. 8d.). In a dozen pages of that report (pp. 81 to 93) is a very useful and instructive summary of the conditions and treatment of this distressing defect of speech. It has the advantage of being the summation of the reports and opinions of a number of school medical officers who have paid special attention to the condition, and who in their own districts have gone to the length of instituting special classes for the treatment of the affected children. The causes of the failure of the harmonious working of speech mechanism are discussed, statistics of its incidence in this and other countries tabled, effective lines of treatment are described, and the results of such treatment recorded. Such a summary as this is of much greater utility than the record of the results obtained at single hand, however critical be the observer. There are two comments in the report worth quoting here: "In this country, broadly speaking, stammering has not been viewed as a disease, and consequently has been to a large extent ignored by medical men. . . . The disabilities of the stammerer and the prejudicial effect of the condition on his prospects in after-life are in some cases real and serious. Without undue or disproportionate expenditure many cases can be cured, and all with few exceptions greatly ameliorated." Treatment, it is pointed out, should be directed to (1) the physical and general welfare of the child; (2) the general mental condition; and (3) the defect itself. As regards the last "suggestion" certainly plays a large part in the treatment, and the direct methods adopted aim at the restoration of the nervous co-ordination of the muscular mechanisms concerned in the production of speech by the use of certain respiratory and vocal exercises.

HERPES AND VARICELLA.

DR. F. G. GARDNER (Oxford) writes: Many cases of this sequence have been recorded. I should like to bring forward one more instance. On March 2nd last I saw a married lady who was suffering from a well-marked attack of herpes of one thigh and hip. Fifteen days later her little girl, aged 3, developed a well-marked varicella rash. The child *may*, of course, have been exposed to the infection of chicken-pox, but the mother was quite sure such had not been the case.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 30, 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

THE appointment of certifying factory surgeon at Weymouth (Dorset) is vacant.

The Right Way in Photography is the title of a pamphlet Messrs. Burroughs, Wellcome and Co. have issued; it contains useful notes, particularly on modern methods of plate and film development, and on intensifying.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page)	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.